



Research Product 98-10

**Plan for Combat Operations
(Battlefield Function 18)
as Accomplished by an Engineer
Battalion Supporting a Heavy Brigade
Volume 2: Assessment Package**

William J. Mullen III and Toni R. Kemper
BDM Federal, Inc.

Martin S. Anderson and Robert A. Clagg
PRC, Inc.

December 1997

Armored Forces Research Unit

U.S. Army Research Institute for the Behavioral and Social Sciences

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U.S. ARMY RESEARCH INSTITUTE FOR THE BEHAVIORAL AND SOCIAL SCIENCES

A Directorate of the U.S. Total Army Personnel Command

EDGAR M. JOHNSON
Director

Research accomplished under contract
for the Department of the Army

BDM Federal, Inc.

Technical review by

Dorothy L. Finley, ARI AFRU
Kathleen A. Quinkert, ARI AFRU

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14. ABSTRACT (<i>Maximum 200 words</i>): The purpose of the overall research program was to document the synchronization required by command and control tasks performed within the armored brigade, to include combat support and combat service support units. The immediate application of the documentation was to support developers of staff training in two related projects: Battle Staff Training System and Staff Group Trainer. The documentation was also intended to assist with the planning and execution of collective training. The documentation approach was to apply function analysis (FA) techniques for battlefield functions (BFs) in the Command and Control battlefield operating system. Thirteen FAs were developed for the brigade headquarters and four supporting units: direct support field artillery battalion, engineer battalion, forward support battalion, and air defense artillery battery. The FAs were revised through a formative evaluation process that included internal review and successive external reviews by combat training centers, proponent agencies, and a review council representing potential users of the FAs. The final products include the FAs, a user's guide, and assessment packages for the BFs. This report provides the assessment package for BF 18 as performed by the engineer battalion supporting a heavy brigade.					
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FOREWORD

One of the goals for the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) is to facilitate the development of training strategies that will serve the needs of the combined arms team today and into the 21st century. The indispensable foundations, the cornerstones, for meeting this goal are solid information and data bases. One such base is a set of comprehensive descriptions of how soldiers accomplish their missions. Many task descriptions have been developed where the focus is on activities within a particular Battlefield Operating System (BOS); these are often further narrowed to one BOS element within one echelon. What have been lacking are function analyses along with task descriptions that have a broader BOS perspective; one which focuses not only on intra-BOS relationships, but also the relationships of that BOS with other BOSs in accomplishing the overall mission. It is this latter perspective which is needed, for example, to define training requirements and strategies for combined arms operations.

The assessment procedures described in this report are based on a function analysis resulting from one of three efforts conducted under the ARI project, “Innovative Tools and Techniques for Brigade and Below Staff Training (ITTBBST).” The work in this part of ITTBBST is the fifth in a series of ARI projects directed at analyzing the vertical and horizontal synchronization required by combined arms operations. All of the projects have analyzed functions, previously labeled “critical combat functions (CCFs)” and now labeled “battlefield functions (BFs).” The previous projects analyzed: all BFs performed by a heavy battalion task force; a sample of seven BFs performed by an armored brigade; and the integration of fire support BFs as performed by an armored brigade and at echelons higher than brigade. The research in this project analyzed BFs in the Command and Control BOS. Separate coordinated analyses of these BFs were performed for the armored brigade headquarters and four types of supporting units, one of which is the Engineer Battalion.

The analyses developed in the project have been used in the development of staff training in related projects within the ITTBBST program. In addition, U.S. Army Training and Doctrine Command (TRADOC) representatives have identified a variety of applications by TRADOC training and other developers as well as potentials for collective training management.

ZITA M. SIMUTIS
Technical Director

ACKNOWLEDGMENTS

The assessment package contained in this volume is based on the battlefield function analysis presented in Volume 1. That analysis benefited from considerable dedicated effort on the part of many persons. The efforts of a few of these many persons are specifically and gratefully acknowledged here. An especially key person was MG (Ret) Lon E. Maggart, Commanding General of the U.S. Army Armor Center (USAARMC). Prior to and during the conduct of this effort, he contributed greatly to definition of training needs and concepts in support of Force XXI. He saw that battlefield functional analyses could provide a valuable foundation for Force XXI training development efforts; hence, MG (Ret) Maggart strongly backed these efforts.

COL G. Patrick Ritter and LTC Marvin K. Decker, acting in accordance and agreement with MG (Ret) Maggart's vision, vigorously pursued battlefield function analysis efforts and persevered in ensuring their application to Force XXI training developments. COL Ritter, Director of Directorate of Training Development and Doctrine (DTDD) at USAARMC, and LTC Decker, Chief of DTDD's Force XXI Training Program (FXXITP) office, ensured implementation of necessary actions, and the participation of military subject matter experts and potential users of function analysis products as needed to assure quality outcomes.

Among many participants in performing the analyses themselves, and validating their integrity and validity, were members of the Directorate of Training at U.S. Army Engineer School (USAES), DTDD at USAARMC, and Operations Group at the National Training Center (NTC). Final recommendations and approval of these analyses were provided by proponents and users constituting the Force XXI Review Council. Members of the Review Council included: COL G. Patrick Ritter and LTC Marvin K. Decker, USAARMC; LTC James R. Harrison, U.S. Army Armor School (USAARMS); COL Philip Federle, USAES; LTC David M. Annen, U.S. Army Field Artillery School; LTC Larry Newman, U.S. Army Air Defense Artillery School; LTC Roger F. Murtie, National Training Center; LTC Gilbert Pearsall, Joint Readiness Training Center; COL Roger W. Jones, TRADOC Program Integration Office-Army Battle Command System; and COL Robert J. Fulcher, 29th Infantry Regiment.

The research for and preparation of this report benefited immeasurably from the assistance provided by members of the U.S. Army Research Institute. Specifically, the authors would like to acknowledge Dr. Kathy Quinkert for her continual support and guidance. As Contracting Officer's Representative, she interfaced with the FXXITP and the Army audience continually in providing program intent. Additionally, Ms. Dorothy Finley is acknowledged for serving as a peer reviewer for the product. She offered constructive comments that have improved both the content and style of the report. Also, special recognition is given to Ms. May Throne, a Consortium Research Fellow from the University of Louisville assigned to Fort Knox, and Ms. Lori Cracknell. Their never ending efforts to assist in the formal production of this report will not soon be forgotten.

PLAN FOR COMBAT OPERATIONS (BATTLEFIELD FUNCTION 18) AS ACCOMPLISHED BY AN ENGINEER BATTALION
SUPPORTING A HEAVY BRIGADE VOLUME 2: ASSESSMENT PACKAGE

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INTRODUCTION

The results of the Army Research Institute's examination of battlefield functions (BFs) relevant to a brigade combat team's combined arms operations are in a series of two volume sets. These sets cover brigade headquarters and the supporting units of air defense artillery battery, engineer battalion, field artillery battalion, and forward support battalion. Volume 1, Function Analysis, identifies and describes information and tasks necessary to accomplish the function. The analysis is targeted at planning and conducting collective training. Volume 2 provides an Assessment Package. It implements an assessment approach that identifies the purpose of the unit's action in relation to the function. This provides a basis for appraising the performance of the function and the outcomes resulting from it. The assessment package is intended to support the conduct of a training event, such as a field training exercise (FTX) or command post exercise (CPX). The package assists assessment planning, data collection, and using the collected data in the conduct of after action reviews (AARs). The materials assume skilled observers who can quickly identify when a unit is performing especially well or not, and, if not, the nature of the problem. Nothing in the Assessment Package can substitute for that expertise. The package adds value to two aspects of assessment. First, consistency in the assessment of multiple observers is facilitated through the consideration of the same outcomes and tasks. Second, efficiency in the assessment and AAR process is enhanced.

This assessment package is for the engineer battalion supporting a heavy brigade. It is organized to allow a commander or other observer to consider performance at several levels associated with increasingly focused questions:

- Did the unit achieve the purpose of the BF (e.g., for BF 19, to provide leadership, direction, command, and control during preparation for the battle)?
- If the purpose was not achieved, which outcomes did not occur? (e.g., Did subordinate leaders demonstrate an understanding of the critical elements of their own mission and mission essential tasks, the brigade mission, and the brigade commander's intent?)
- If an outcome did not occur or if performance was exemplary, what components of the outcome (e.g., backbriefs, rehearsals) or clusters of tasks (e.g., rehearsal tasks related to level of participation, priority of tasks, and realism) were notable strengths or weaknesses?

The tools provided in this Assessment Package include:

- Worksheet: This provides a means to record brief answers to each of above three questions.

- **Assessment Strategy and Assessment Scale:** The Strategy section advises where assessment personnel should be stationed to both observe performance, and review incoming information and outgoing products. The Assessment Scale can be used to assign evaluative ratings to both observations and products.
- **Outcome Assessment Observations and Diagnosis Aids:** These forms guide observers in making their evaluative ratings and then in further specifying, or diagnosing, any weakness in the observed performance.
- **Product Review Measures of Effectiveness:** These forms provide a means for collecting information regarding each of the products. They identify the products to be reviewed, which items to evaluate, and the information to be recorded.

Planning Assessment

The Assessment Strategy tool, briefly noted above, lists all outcomes that could be addressed, suggests where observers should be located, and specifies activities and products to be observed. The strategy helps commanders decide which outcomes should be addressed, guides the estimate of the number of observers and types of enemy forces required, and identifies the relevant assessment tools in the package (e.g., measures of effectiveness, outcome assessment guides, and diagnostic aids).

Conducting AARs

In assessing the training and organizing the AAR, the commander or observer progresses through three decisions. The first decision is whether the function was accomplished and if it should be addressed in the AAR. This decision is typically based on whether the unit accomplished the purpose of the function and the outcomes that support the purpose. The next level of choice is the selection of function outcomes that are appropriate for the AAR. This analysis is supported by objective measures in the Assessment Package's tables and a framework for systematic expert judgment concerning performance related to the outcome. The third level of selection concerns the specific behavior related to the outcome that was pivotal to the unit's success or failure. This selection is aided by data collected in accordance with the observation and product review guides for each component. In complex outcomes, the performance requirements are broken into components to help the commander or other observers focus their attention. In all cases, related tasks and supporting tasks are summarized to describe behavior required to achieve the outcome. Two types of measures help provide the desired consistency and efficiency.

Outcome Assessment Guides. These guides usually require the commander or observer to be present to watch the unit's actions and judge the results. Tasks and supporting tasks associated with each outcome are grouped into likely strengths or

weaknesses. The guides are supported by diagnostic aids tied to the function analysis in Volume 1. The diagnostic aids list the tasks and supporting tasks that apply to the outcome components and task summaries.

Product Measures of Effectiveness. These measures help anchor the assessment with objective data. The tables associated with the measures of effectiveness should be completed for each event that covers the relevant outcomes. Over time, the measures will provide a context for showing how performance compares with other units or with previous performance by the subject unit. Many of the measures can be completed based on products, so the commander or observer does not have to view the performance. There should, however, be a mechanism in place to collect and process the information before the AAR.

WORKSHEET

MISSION _____
DATE _____
UNIT _____

Briefly state the higher commanders' intents for this mission in the box below.

Supported brigade commander's intent:

Engineer brigade commander's intent:

PURPOSE OF THE BF: To provide direction and guidance to all elements of the engineer battalion in the form of orders.

Did the engineer battalion achieve this purpose? (Circle one:) YES NO

If this performance exceeded the standard, please describe any techniques of superior performance. These are techniques that you believe should be cited in the AAR and, perhaps, relayed through lessons learned agencies to be shared with the rest of the Army.

WORKSHEET (Continued)

Outcome	Achieved?	Notes
OUTCOME 1: Complete, concise, feasible, suitable, acceptable, and tactically sound engineer battalion orders are produced.	Y N	<hr/> <hr/> <hr/> <hr/> <hr/>
OUTCOME 2: Engineer battalion orders are received in no more than 1/3 of the available time and understood by key participants.	Y N	<hr/> <hr/> <hr/> <hr/> <hr/>
OUTCOME 3: Sufficient hard copies of engineer battalion orders and all key accompanying documents are provided to key personnel and units in accordance with tactical standing operating procedures (TSOP).	Y N	<hr/> <hr/> <hr/> <hr/> <hr/>
OUTCOME 4: Engineer battalion operations continue during the planning process.	Y N	<hr/> <hr/> <hr/> <hr/> <hr/>

ASSESSMENT STRATEGY

Locations to observe unit performance and aspects of that performance relevant to assessment are suggested for each outcome. The suggested locations and focus/foci are not meant to be an exhaustive or all inclusive list.

Outcome	Location and Focus of Assessment
OUTCOME 1: Complete, concise, feasible, suitable, acceptable, and tactically sound engineer battalion orders are produced.	Focus on the planning process and the engineer operations order (OPORD). (Use Tables 3, 4, 5, 6, 7, and 8) <ul style="list-style-type: none"> • With engineer battalion headquarters to observe parallel planning. • With engineer S3 section to observe and assess planning of the engineer OPORD. • With the engineer battalion commander to assess decision making and guidance to the staff. • Review the engineer battalion OPORD.
OUTCOME 2: Engineer battalion orders are received in no more than 1/3 of the available time and understood by key participants.	Focus on when key participants received the verbal orders and OPORD (1/3-2/3rds “time standard”). (Use Tables 1, 2, 9, and 10) <ul style="list-style-type: none"> • With engineer battalion staff to assess establishment and adherence to timelines. • With engineer battalion staff to assess timelines of information dissemination, especially regarding parallel planning. • With adjacent units to determine when OPORD and verbal orders were received. • With engineer battalion staff to assess timeliness of issuing the engineer OPORD.
OUTCOME 3: Sufficient hard copies of engineer battalion orders and all key accompanying documents are provided to key personnel and units in accordance with TSOP.	Focus on the issuing of hard copy orders and that all documents that they get to the people that need them with all the appropriate attachments. (Use Tables 8 and 9) <ul style="list-style-type: none"> • At engineer headquarters company to observe process and production of all documents. • With engineer companies to observe receipt of orders and required graphics and overlays.

Outcome	Location and Focus of Assessment
<p>OUTCOME 4: Engineer battalion operations continue during the planning process.</p>	<p>Focus on the engineer command and control during planning to assess whether or not they remain responsive and continue operations during the planning process.</p> <ul style="list-style-type: none"> • With engineer battalion headquarters and with engineer companies and platoons (direct support (DS) general support (GS)) to observe ongoing operations. • With the task force's (TF's) allocated engineer support to observe engineer planning and preparation.

ASSESSMENT SCALE

Whenever the unit's performance must be rated with respect to an outcome, or component of an outcome, the rating should be on the scale Adequate, Marginal, Not Adequate, defined below. Whenever these ratings are required, the outcome (or component) will be framed in a box with the rating scale, as in this example:

OUTCOME 1: Complete, concise, feasible, suitable, acceptable, and tactically sound engineer battalion orders are produced.	Adequate	Marginal	Not Adequate
---	----------	----------	--------------

In each case, circle the appropriate rating, using the scale below for guidance:

Adequate	Marginal	Not Adequate
The unit can successfully accomplish the outcome to standard. Outcome is accomplished with no significant shortcomings.	The unit can successfully accomplish the outcome with some shortcomings.	The unit cannot accomplish the outcome to standard.

(Definitions of behaviors representing each of the scale points would be preferable. For example, if there is an existing Army standard, that should become the definition of Adequate performance. An appropriate Army agency, such as one of the Army schools, could define 'behavioral anchors' for these rating scales, taking account of doctrine and lessons learned. Observer controllers (OCs) from the Combat Training Centers (CTCs) could provide additional suggestions [or review]).

Two sub-sections are included with each Outcome's section to assist in the selection of an appropriate rating. These sub-sections should be used if the observer requires more information upon which to base a rating or requires precision to focus planning for training:

- 1) The first sub-section consists of assessment statements which orient the observer on observable performances related to the tasks contributing to achieving the Outcome. The assessment statements were derived by incorporating the substance of several tasks.
- 2) The second sub-section entitled Diagnostic Aid lists the tasks and subtasks supporting that particular Outcome. The diagnostic aid permits selection of specific tasks to facilitate planning future training.

Where appropriate due to complexity, some Outcomes have been divided into outcome components which are assessed separately.

OUTCOME ASSESSMENT OBSERVATIONS AND DIAGNOSIS

OUTCOME 1 ASSESSMENT

OUTCOME 1: Complete, concise, feasible, suitable, acceptable, and tactically sound engineer battalion orders are produced. (Use Tables 3, 4, 5, 6, 7, and 8)

Component A: Warning orders (WARNOs) and the OPORD are complete.	Adequate	Marginal	Not Adequate
---	----------	----------	--------------

Engineer OPORD addresses:

- Who: Engineer elements which will execute the actions.
- What: Type of actions required to support brigade mission essential tasks.
- When: Time actions begin or times when actions are to be complete.
- Where: Locations where support will be required and sites for engineer elements.
- How: Method of conducting the operation using major available assets to include the tasks and purpose for each efforts.
- Why: The purpose of the actions as they relate to the brigade and engineer battalion commanders' intents.
- OPORD covers support of elements under operational control (OPCON) to other units.

Component B: OPORD is concise.	Adequate	Marginal	Not Adequate
---------------------------------------	----------	----------	--------------

- Engineer TSOP clearly identifies standard tasks to be performed.
- Engineer OPORD does not contain TSOP items except when required for emphasis.
- Engineer OPORD is brief and focused, has no unnecessary redundancies.
- Maximum use is made of overlays and graphics.
- Overlays and graphics are clear, accurate, and easy to read.
- Accurate use is made of doctrinal operational terms throughout the engineer battalion OPORD.

Component C: OPORD is suitable.	Adequate	Marginal	Not Adequate
--	----------	----------	--------------

- Engineer OPORD addresses commanders' intents two echelons above (i.e., engineer brigade, maneuver brigade) and is designed to fulfill those intents.
- Engineer OPORD provides for all engineer tasks necessary to meet the brigade requirements.
- Plan maintains security; it reduces vulnerability to hostile acts and surprise.
- Decision authority is decentralized; hence, subordinate leaders are provided with the authority and resources to react to change in the situation.

Component D: OPORD is feasible.	Adequate	Marginal	Not Adequate
--	----------	----------	--------------

- All subordinate and supporting units can accomplish the engineer plan.
- The engineer plan is based on time, space, and means available.
- Tasks designated for subordinate units are within their ability to execute in the time available.
- Means of command, control, communications, and intelligence (C3I) are sufficient to accomplish the mission.
- Sufficient time exists for all units to conduct troop leading procedures.
- Sufficient resources are available to complete the mission.

Component E: OPORD is acceptable.	Adequate	Marginal	Not Adequate
--	----------	----------	--------------

- The plan contains no unacceptable risks to mission completion.
- The plan takes into account all limitations placed on the battalion (constrictions=must do, restrictions=must not do).
- Anticipated risk to personnel and equipment is no more than absolutely necessary.

- Chance of fratricide is mitigated by the plan and prescribed control measures.

OUTCOME 1 DIAGNOSTIC AID

OUTCOME 1: Complete, concise, feasible, suitable, acceptable, and tactically sound engineer battalion orders are produced.

Task Elements

Component A: OPORD is complete.

4. **The engineer battalion executive officer directs the staff in the preparation and issuance of an engineer battalion warning order.** [field manual (FM) 5-71-3 Chap 2]
 - 4a. The engineer battalion executive officer (XO) ensures that the engineer battalion WARNOs are prepared and issued in the 5-paragraph format and: [FM 101-5, p. H-13]
 - 4a1 Provide major timeline events which accompany mission execution.
 - 4a2 Provide planning focus to subordinate unit commanders and staff.
 - 4a3 Provide essential details of impending engineer operations.
 - 4b. The engineer battalion staff, under the supervision of the engineer battalion XO, prepares the WARNO, which includes critical information available at the time for WARNO, such as: [FM 5-71-3, Chap 2] (Normally a minimum of three WARNOs are issued during the conduct of the military decision-making process (MDMP).)
 - 4b1 Enemy and friendly situations.
 - 4b2 Changes in task organization.
 - 4b3 Directed movements of subordinate units and linkups.

- 4b4 Nature and time of operation.
- 4b5 Time and place the engineer battalion OPORD will be issued.
- 4b6 Other specified tasks.
- 4b7 Service support instructions.
- 5. **The engineer battalion commander issues planning guidance.** [FM 101-5, Chap. 4 FM 5-71-3]
 - 5d. The engineer battalion commander issues guidance to the engineer staff that is complete and includes: [FM 5-71-3, p. 2-19; FM 101-5, Chap 4]
 - 5d1 Commander's intent. [FM 5-71-3, p. 2-19; FM 101-5, p. 4-18]
 - a) Supported maneuver brigade and division commanders' intents.
 - b) His own intent, which includes:
 - (1) Purpose.
 - (2) Method.
 - (3) Endstate.
 - 5d2 Restated mission for the engineer battalion. [FM 5-71-3, p. 2-19; FM 101-5, p. 4-18]
 - a) Stated in doctrinally correct terms.
 - b) Explains missions as tasks and purposes.
 - 5d3 Planning and operational timelines. [FM 101-5, p. 4-23]
 - 5d4 Engineer battalion course of action (COAs) to consider. [FM 5-71-3, p. 2-19]
 - 5d5 Engineer battalion commander's critical information requirements (CCIR) for each phase of the operation, including: [Battle Command Battle Lab (BCBL) Battle Command, p. 21; field note (FN) - U.S. Army Engineering School (USAES)]
 - a) Essential elements of friendly information (EEFI).
 - b) Friendly force information requirements (FFIR).

- c) Priority information requirements (PIR).
 - d) Instructions for incorporating engineer battalion CCIR into maneuver brigade CCIR, as appropriate.
- 5d6 Effects desired on enemy force. [FM 5-71-3, p. 2-19]
- 5d7 Risk assessment. [FM 5-71-3, p. 2-19]
- 5d8 Priorities. [FM 101-5, p. 4-22]
 - a) Priorities of engineer tasks.
 - b) Priorities of additional engineer assets.
 - c) Priorities for equipment repair.
- 5d9 Time plan. [FM 101-5, p. 4-23]
 - a) Time allocated for planning and preparation to the engineer battalion staff and to subordinate units.
 - b) The engineer battalion commander determines who, where, and how the engineer battalion OPORD will be issued.
- 5d10 Type of battalion order to issue; formats include: [FM 101-5, p. 4-24]
 - a) Fragmentary order (FRAGO).
 - b) Oral order.
 - c) Overlay order.
 - d) Five paragraph.
- 5d11 Type of rehearsal to conduct; options include: [FM 101-5, p. 4-25]
 - a) Backbrief.
 - b) Radio.
 - c) Map.
 - d) Sketch map.
 - e) Terrain model.
 - f) Key leader.
 - g) Full.
- 5d12 Any modifications to MDMP needed to cope with mission, enemy, troops, terrain, and time available (METT-T) (e.g., time constraints). [FM 101-5, p. 4-16] [Author Note (AN)]

- 5d13 Rehearsals of brigade and other brigade units in which the engineer battalion will participate or observe. [AN]
- 8. **The engineer battalion commander and staff analyze course(s) of action.** [FM 5-71-3 Chap 2; FM 101-5, p. 4-28, App F]
 - 8e. As a result of war-gaming, the engineer battalion XO ensures that the staff members develop and refine appropriate products for which they are functionally responsible: [FM 101-5, App F]
 - 8e1 Overlay.
 - 8e2 Event template.
 - 8e3 Initial decision support template (DST).
 - 8e4 Branches to plan.
 - 8e5 Battalion CCIR.
 - 8e6 Operational risk assessment.
 - 8e7 Possible fratricide locations/situations.
 - 8e8 Execution matrix.
 - 8e9 Synchronization matrix if other force elements are involved in engineer battalion TF.
 - 8e10 Requests for additional assets required by battalion staff.
 - 8e11 Information staff requires to prepare their portion of the OPORD.
 - 8h. Upon completing COA war-gaming, the engineer battalion XO ensures that: [CTC Bulletin No. 95-4]
 - 8h1 War-gaming notes are completed.

- 10. **The engineer battalion commander announces his decision.** [FM 101-5, Chap. 4]
 - 10a. The engineer battalion commander announces his COA decision by: [FM 101-5 p. 4-35]
 - 10a1 A clear, concise statement of his intent and concept of operation.
 - 10a2 Stating the who-what-when-where-how-and why associated with the COA.
 - 10a3 Stating the risk he is willing to accept to:
 - a) Retain engineer capabilities.
 - b) Complete engineer tasks.
 - 10a4 The engineer battalion commander specifies the battalion task organization. [FM 101-5 p. 4-35]
 - 10a5 The engineer battalion commander specifies the command and support relationships of engineer companies/elements. [FM 101-5, p. 4-35]
 - a) By phase of operation.
 - b) With supported maneuver elements.
 - 11. **The engineer battalion staff prepares the operations order.** [Army Training and Evaluation Program (ARTEP) 5-145-Mission Training Plan (MTP) 05-1-0007, FM 5-71-3 Chap 2 and App D; FM 101-5, Chap. 4]
 - 11d. The engineer battalion staff, under supervision of the engineer battalion XO, develops a WARNO that includes critical information based on results of COA analysis and engineer battalion commander's decision. [FM 5-71-3, Chap 2]
 - 11f. The engineer battalion staff, under the supervision of the XO, converts the war-gaming notes and engineer battalion commander's guidance into a written order (OPORD). [ARTEP 5-145-MTP 05-1-0007/4a]
 - 11f1 The engineer battalion S2 prepares paragraph 1a, enemy situation, and an intelligence annex when required in accordance with FM 101-5. [ARTEP 5-145-MTP, 05-1-0007/4c]

- 11f2 The engineer battalion S3 section prepares the task organization, paragraph 1, situation less subparagraph 1a; paragraph 2, mission; paragraph 3, execution; paragraph 5, command and signal; and operation overlays, annexes as required. [ARTEP 5-145-MTP 05-1-0007/4b]
- 11f3 The engineer battalion S4 prepares paragraph 4, service support, and the service support annex and overlay when required. [ARTEP 5-145-MTP 05-1-0007/4d]
- 11f4 The engineer battalion S1 provides the S4 with information on personnel and administrative services to be included in paragraph 4, service support, or the service support annex. [ARTEP 5-145-MTP 05-1-0007/4e]
- 11f5 The engineer battalion maintenance technician (BMT) provides the S4 with information on maintenance services to be included in paragraph 4, service support or service support annex. [ARTEP 5-145-MTP 05-1-0007/4f]
- 11f6 The engineer brigade (Bde) signal officer (SO) provides the S3 with information about communication requirements, assets, and instructions to be included in paragraph 5, command, and signal. [ARTEP 5-145-MTP 05-1-0007/4g]
- 11f7 The engineer battalion nuclear, biological, and chemical (NBC) non-commissioned officer (NCO) provides input to the S3 for the order, which includes: [AN]
- a) Locations of decontamination sites.
 - b) Smoke operations.
 - c) Mission oriented protective posture (MOPP) status.
- 11f8 The engineer battalion S2, S4, S1, BMT, battalion (Bn) SO, and NBC NCO provide the engineer battalion S3 with any coordinating instructions. [ARTEP 5-145-MTP 05-1-0007/4c-g]
- 11f9 For engineer battalion task force operations, liaison officers (LNOs) from the other force elements provide information about their units' operations to the engineer battalion S3 for integration into the order as appropriate. [FM 5-71-3, Chap 5]
- a) Maneuver.
 - b) Fire support.
 - c) Military police.
 - d) Air defense.
 - e) Chemical (smoke).

11g. The engineer battalion S3 section ensures that the engineer battalion OPORD order is doctrinally sufficient and in a doctrinally correct format: [ARTEP 5-145-0007/6; FM 5-71-3 App D]

11g1 Heading to include:

- a) Security markings.
- b) Confirmation statement in regard to oral orders.
- c) Copy number.
- d) Issuing headquarters.
- e) Place of issue.
- f) Date and time order is signed.
- g) Message reference number.
- h) OPORD number.
- i) Code name (if applicable).
- j) Map references.
- k) Time zone order is executed.

11g2 Task organization:

- a) Includes all engineer headquarters of units under brigade control.
- b) Includes all engineer headquarters of organic units if the OPORD is the initial order for the operation.
- c) Lists companies and special platoons task organized to headquarters (HQ) other than their parent unit.
- d) Lists special equipment if not clear in unit task organization.
- e) Addresses command and support relationships, as necessary.
- f) Streamlines command and control (C2).

11g3 Situation:

- a) Enemy forces:
 - (1) Terrain and weather include:
 - (a) Critical aspects of the terrain that affect operations.
 - (b) Critical and decisive terrain in the brigade area.
 - (c) Expected weather conditions and their impact on operations.
 - (d) Light data and its impact on operations.
 - (2) Enemy situation. This paragraph should include:
 - (a) Macro picture of enemy forces facing the brigade.

- (b) Current disposition of enemy forces, strength, disposition, composition, and current activities.
 - (c) Enemy engineer activities and capabilities.
 - (d) Enemy activities, capabilities, and COAs that affect brigade level engineer operations.
- b) Friendly forces:
 - (1) Higher. This paragraph should include:
 - (a) Division and supported maneuver brigade missions and commanders' intent paraphrased as it applies to engineer operations.
 - (b) Brief description of division plan.
 - (c) Division level engineer plans and priorities.
 - (2) Adjacent. Highlight missions of adjacent divisions and engineer units that impact brigade missions.
- c) Attachments and detachments:
 - (1) List attachments and detachments of organic and supporting engineers to the maneuver brigade.
 - (2) Highlight any attachments and detachments that occur during the operation.
 - (3) Identify the time or event for the change.

11g4 Mission. This paragraph should include:

- a) The engineer battalion organization (who).
- b) The supported maneuver brigade and any essential brigade-level engineer missions (what, when, where, and why).

11g5 Execution:

- a) Engineer battalion commander's intent for the operation:
 - (1) Commander's vision for operation and how it supports the brigade plan.
 - (2) The purpose of the operation.
 - (3) The endstate of battalion level operations and its link to the endstate of brigade operation.
 - (4) Linkage of the engineer battalion commander's intent to the brigade defeat mechanism.
- b) Concept of engineer battalion operations:
 - (1) Uses phrases of the supported maneuver brigade plan to organize the narrative.
 - (2) Focuses on mission-essential engineer tasks and the supported maneuver brigade's main engineer effort.
 - (3) Identifies main engineer effort and shifts (changes) in priority during the operation to support the brigade plan.
 - (a) Tactical obstacles:
 - 1 Details the counter-mobility effort.
 - 2 Identifies obstacle belts and groups and assigns responsibilities, priorities, and restrictions to brigade-level counter mobility efforts and engineer units.

- 3 Identifies and assigns responsibilities for brigade and division-directed reserve targets to be prepared by brigade-controlled engineer units.
 - (b) Situational obstacles:
 - 1 Includes concept for employment of situational obstacles and integration to complement tactical obstacles.
 - 2 Details named areas of interest (NAIs), target areas of interest (TAIs), decision points (DPs), and execution criteria if the scatterable mine (SCATMINE) is executed by brigade controlled engineer units.
 - 3 States headquarters maintaining authority to use SCATMINES and any restrictions on duration by belt.
 - (c) Survivability construction. Describes the tactical construction plan along a timeline that delineates which units get how many positions by type (e.g., TF 2-5 Cavalry 12 M1 positions, 12 Bradley positions).
NOTE: Consider a construction matrix as an annex.
 - (d) Mobility operations.
 - 1 Describes the concept for brigade deliberate breaching.
 - 2 Describes the concept for brigade hasty gap crossings.
 - 3 Describes plan for combat road/trail construction/upgrade throughout the brigade area of operations.
- c) Tasks to subordinate units:
 - (1) Lists all tasks assigned to engineer units remaining under the engineer battalion's control and any combat support units under engineer battalion TF control.
 - (2) Lists tasks assigned by unit in the order they will be executed.
 - (3) Distinguishes between "be prepared," or "on order" tasks and "execute now" tasks.
- d) Coordinating instructions:
 - (1) Includes tasks and instructions that are common to two or more units.
 - (2) Lists all pertinent coordinating instructions listed in brigade order.
 - (3) Authorizes direct coordination, if appropriate.
 - (4) Describes any turnover of tasks between engineer units for breaches, fords, obstacles, etc.
 - (5) Gives time task organization is effective.

11g6 Service support:

- a) General concept of logistics support.

- (1) Provides general concept of logistics support for units under the battalion commander's control throughout the operation.
- (2) Describes support of those battalion elements given OPCON to other units.
- (3) Identifies primary and backup means of subunit sustainment, addressing who (companies); how (area support, unit support, supply point distribution, and unit distribution); where (brigade support area (BSA), trains); and what (classes of supply and critical services).
- (4) Makes maximum references to brigade combat service support (CSS) graphics.
- (5) Ensures consistency with task organization and command support relationships.
- (6) Lists locations of key CSS nodes as they apply to concept of logistics support.
- b) Material and services:
 - (1) Supply. For each class of supply:
 - (a) Lists allocation and controlled supply rates (CSRs) for each unit based on missions.
 - (b) Lists basic loads to be maintained by the unit.
 - (c) Addresses mission logistics arrangements (Class IV, V).
 - (2) Transportation:
 - (a) Lists primary, alternate, and contaminated main supply routes (MSRs) during operation.
 - (b) States allocations of division or corps haul assets.
 - (3) Services. For each service, lists location and means of requesting.
- c) Medical treatment, evacuation, and hospitalization. Indicates primary and backup means of medical evacuation and locations of facilities.
- d) Personnel:
 - (1) Identifies method of handling enemy prisoners of war (EPWs) and EPW collection points.
 - (2) Identifies method of receiving mail, religious services, and graves registration.
- e) Civil-military cooperation. Identifies engineer supplies, services, or equipment provided by host nation.

11g7 Command and signal:

- a) Command:
 - (1) Location of engineer command posts (CPs).
 - (2) Projected displacement of CPs.
- b) Signal:
 - (1) Identifies any signal/communication peculiarities for operation not covered in standard operating procedure (SOP).
 - (2) Identifies critical reporting requirements of subordinates if not covered in SOP.

(3) Designates nets for mission and routine reports.

11g8 Ending:

- a) Acknowledgment of receipt and understanding.
- b) Original order signed by commander or designated representative.
- c) Other copies authenticated by the engineer battalion S3.
- d) Annexes lettered alphabetically and listed in the order as they appear in the OPORD.
- e) Distribution includes:
 - (1) Subordinate units.
 - (2) Higher units.
 - (3) Adjacent units.
 - (4) Supporting units as necessary.
- f) Security markings (top/bottom of each page, centered).

11h. The engineer battalion XO ensures that the OPORD meets the following criteria: [ARTEP 5-145-MTP 05-1-0007/5]

11h1 Has clarity.

11h3 Contains timelines.

11h6 Is directed to only major subordinate units under engineer battalion's control.

11h7 Covers support of elements under OPCON to other units.

11i. The engineer battalion XO supervises the production of the OPORD and: [ARTEP 5-145 MTP, 05-1-0007/4a]

11i1 Engineer battalion XO employs the necessary staff to rapidly produce an accurate OPORD in sufficient copies by performing trained, drilled tasks and responsibilities. [Center for Army Lessons Learned (CALL) Newsletter No. 93-3, p. 27]

11i2 The engineer battalion S3 section incorporates all appropriate annexes, matrices, and overlays into the order. [FM 5-71-3, App D]

- a) Execution matrix.
- b) Decision support template.

- c) Engineer operations overlay (includes maneuver graphics as necessary).
- d) Intelligence annex.
- e) CSS annex.
- f) Movement annex.
- g) Brigade CSS overlay.
- h) Brigade obstacle plan overlay.

11i3 The engineer battalion S3 checks OPORD for legibility and accuracy.

11i4 The engineer battalion S3 cross checks graphics with written portion of order.

11j. During the MDMP in a time-constrained environment, the engineer battalion staff uses preformatted orders and graphics to reduce preparation time. [LL - CALL Newsletter No. 93-3, p. 27]

Component B: OPORD is concise.

5. **The engineer battalion commander issues planning guidance.** [FM 101-5, Chap. 4 FM 5-71-3]

5d. The engineer battalion commander issues guidance to the engineer staff that is complete and includes: [FM 5-71-3, p. 2-19; FM 101-5, Chap 4]

5d10 Type of battalion order to issue; formats include: [FM 101-5, p. 4-24]

- a) FRAGO.
- b) Oral order.
- c) Overlay order.
- d) Five paragraph.

8. **The engineer battalion commander and staff analyze course(s) of action.** [FM 5-71-3 Chap 2; FM 101-5, p. 4-28, App F]

8e. As a result of war-gaming, the engineer battalion XO ensures that the staff members develop and refine appropriate products for which they are functionally responsible: [FM 101-5, App F]

8e1 Overlay.

- 8e8 Execution matrix.
- 8e9 Synchronization matrix if other force elements are involved in engineer battalion TF.
- 10. **The engineer battalion commander announces his decision.** [FM 101-5, Chap. 4]
 - 10a. The engineer battalion commander announces his COA decision by: [FM 101-5 p. 4-35]
 - 10a1 A clear, concise statement of his intent and concept of operation.
- 11. **The engineer battalion staff prepares the operations order.** [ARTEP 5-145-MTP 05-1-0007, FM 5-71-3 Chap 2 and App D; FM 101-5, Chap. 4]
 - 11h. The engineer battalion XO ensures that the OPORD meets the following criteria: [ARTEP 5-145-MTP 05-1-0007/5]
 - 11h1 Has clarity.
 - 11h2 Shows simplicity.
 - 11h4 Excludes irrelevant information.
 - 11h5 Excludes items covered in unit TSOP.
 - 11i. The engineer battalion XO supervises the production of the OPORD and: [ARTEP 5-145 MTP, 05-1-0007/4a]
 - 11i3 The engineer battalion S3 checks OPORD for legibility and accuracy.

Component C-E: OPORD is suitable, feasible, and acceptable.¹

¹ Note: because tasks regarding feasibility, suitability, and acceptability overlap, the diagnoses tasks for these components will be presented as one diagnosis.

- 2. **The engineer battalion receives an order initiating a new mission from higher headquarters.** [FM 101-5; FM 5-71-100, FM 5-71-3]
 - 2a. The engineer battalion commander as the brigade engineer attends the division orders brief in accordance with supported maneuver brigade TSOP. [AN]
 - 2a1 Receives any additional guidance and information after briefing from engineer brigade commander and staff.
 - 2a2 Focuses on the engineer briefing by the engineer brigade commander as the division engineer.
 - 2b. The engineer battalion receives a WARNO. (The engineer battalion may receive a WARNO from the engineer brigade and from the supported maneuver brigade. [FM 5-71-3 Chap 2; FM 5-71-100, B-13])
 - 2b1 When a WARNO from the engineer brigade is received prior to the division OPORD briefing, the engineer battalion XO informs the engineer battalion commander of the content of the WARNO; critical information communicated includes: [FM 5-71-3 Chap 2; FM 5-71-100, B-13]
 - a) Friendly and enemy situation.
 - b) Tentative changes to task organization.
 - c) Tentative scheme of engineer operations.
 - d) On-order tasks.
 - e) Logistics operations.
 - f) Changes to situation, guidance since last order.
 - 2b2 When a supported maneuver brigade WARNO is received, the engineer battalion XO informs the engineer battalion commander of the content of the WARNO; critical information communicated includes: [FM 5-71-3 Chap 2; FM 101-5, PH-14]
 - a) Brigade mission.
 - b) Division mission and intent.
 - c) Brigade commander's intent.
 - d) Orders for preliminary action.
 - e) Service support instructions.
 - f) Timelines.
 - g) Tasks for brigade units.
 - h) Changes to situation, guidance since last order.

- 2c. The engineer battalion commander, as brigade engineer, initiates detailed terrain analysis using: [FM 5-71-3 Chap 2; FN - USAES]
 - 2c1 TerraBase products.
 - 2c2 Map reconnaissance.
 - 2c3 Aerial photographs.
 - 2c4 Air and ground reconnaissance.
- 2d. The engineer battalion XO initiates the process to inform the engineer battalion staff on the content of the WARNOs/OPORDs as they are received. Staff begins planning in parallel with the brigade. [AN]
 - 2d1 Conducts “staff huddles.”
 - 2d2 Initiates staff estimate process.
 - 2d3 Directs coordination of staff sections.
 - 2d4 Directs new information as it is received to the appropriate staff section.
- 2e. The engineer battalion S3 section obtains copies of higher headquarters written OPORDs/WARNOs and provides an advance copy to the engineer battalion rear CP; receives: [ARTEP 5-145-MTP 05-1-0018/4a(2)(c); FN - NTC Engineer (Engr) OCs]
 - 2e1 Division OPORD with engineer annex from ABE section.
 - 2e2 Division engineer unit WARNO/OPORD from engineer brigade by courier or electronic means.
 - 2e3 Supported maneuver brigade WARNO from maneuver brigade S3 section.

- 2f. The engineer battalion rear CP coordinates with supported maneuver Bde S4 and forward support battalion (FSB) support operations section to obtain a copy of the division OPORD. [FN-NTC Engr OCs]
- 2i. The engineer battalion S3 (as officer in charge [OIC] of the ABE section) and the engineer battalion XO coordinate closely to support planning in parallel with the brigade and facilitate information flow. [FM 5-71-3 p. 2-22]
- 2i1 The engineer battalion S3 provides the engineer battalion XO and staff with timely information concerning:
 - a) Supported maneuver brigade mission analysis.
 - b) Supported maneuver brigade commander's planning guidance.
 - c) Supported maneuver brigade COA development.
 - d) Supported maneuver brigade war-gaming results.
 - e) Supported maneuver brigade commander's COA decision.
- 2j. The engineer battalion XO directs the efforts of the engineer battalion staff in preparation for implementing the MDMP. [FM 5-71-3 Chap 2]
- 2j1 Upon receipt of a higher headquarters order, the engineer battalion XO develops a planning and preparation timeline for the staff.
- 2j2 The engineer battalion XO ensures that any LNOs are:
 - a) Dispatched as required.
 - b) Received from other units and given an orientation briefing.
- 2j3 The engineer battalion XO prepares to issue an initial WARNO to all engineer battalion subordinate units. (See also Task 4 of this analysis.)
- 2k. The engineer battalion S1 or S4 comes forward to the engineer battalion main CP upon receipt of division and/or division engineer unit OPORD to: [AN]
- 2k1 Participate in the battalion orders process.
- 2k2 Coordinate with brigade staff counterparts.

- 2l. The engineer battalion commander as the brigade engineer attends maneuver brigade mission analysis at brigade main CP.² [FN-NTC Engr OC]
- 3. **The engineer battalion commander and staff conduct mission analysis.** [ARTEP 5-145-MTP, 05-1-0002; FM 101-5 Chap 4, FM 5-71-3 Chap 2]
 - 3a. The engineer battalion commander performs a mission analysis. [ARTEP 5-145-MTP 05-1-0002/1a, and FM 101-5, p. 4-11]
 - 3a1 The engineer battalion commander derives the missions and intents of division, engineer brigade, and supported maneuver brigade commanders.
 - 3a2 The engineer battalion commander communicates his understanding of these higher HQ commanders' missions and intents to his staff.
 - 3b. The engineer battalion staff members individually conduct mission analyses of higher HQ missions and higher commanders' intents, utilizing the division OPORD engineer annex, division engineer unit WARNO, and the supported maneuver brigade's WARNO to determine: [FM 101-5, p. 4-11, FM 5-71-3, Chap 2; LL- CALL Newsletter No. 93-3, p. 4]
 - 3b1 Specified tasks.
 - 3b2 Implied tasks.
 - 3b3 Assets available.
 - 3b4 Limitations.
 - a) Constraints.
 - (1) Breach lane requirements.
 - (2) Designated reserve targets.
 - b) Restrictions.
 - (1) Obstacle control measures (e.g., division obstacle zones).

² The engineer battalion commander as brigade engineer should decide whether he will personally continue to participate in the brigade planning process or designate his battalion S3. (This task analysis reflects the S3 as the participant, which is in consonance with FM 5-71-3).

(2) SCATMINE employment.

- 3b5 Critical facts and assumptions relating to engineer operations from the preparation of the engineer battlefield assessment (EBA).
- 3b6 Risk, as applied to engineer capability to perform tasks.
- 3b7 Time analysis:
 - b) Operational timelines that include such items as:
 - (4) Movement times.
 - (5) Line of departure or prepare to defend times.
 - (6) Hours of darkness or limited visibility.
- 3b8 Essential tasks that are critical to the engineer mission.
- 3b9 Restated engineer battalion mission.
- 3b10 Provide engineer battalion XO input for the WARNO. [AN]
- 3c. The engineer battalion XO consolidates individual staff mission analyses and: [FM 101-5 p. 4-14]
 - 3c1 Reviews consolidated mission analysis for accuracy.
 - 3c2 Directs preparation of mission analysis briefing.
 - 3c3 Prepares restated mission for battalion commander's approval.
 - 3c4 Coordinates/provides information concerning mission analysis to/with the ABE.
- 3d. The engineer battalion XO briefs the battalion commander on the results of the staff mission analysis. [FM 101-5, p. 4-14 and App D, FM 5-71-3, Chap 2]
 - 3d1 Specified and implied tasks.

- 3d2 Essential tasks.
- 3d3 Available engineer assets.
- 3d4 Determined limitations.
- 3d5 Proposed acceptable risk to engineer capability.
- 3d6 Determined critical facts and assumptions.
- 3d7 Time analysis.
 - a) Supported maneuver brigade timelines from the ABE section.
 - c) Timeline for engineer operations during preparation and execution phases.
- 3d8 Mission and intent of supported maneuver brigade and division commanders.
- 3d9 Recommended restated engineer battalion mission.
- 3e. The engineer battalion commander based on his own mission analysis and the mission analysis brief from the engineer battalion staff: [FM 101-5, p. 4-15]
 - 3e1 Approves/modifies specified engineer battalion essential tasks.
 - 3e2 Approves/modifies the engineer battalion restated mission.
- 3f. The engineer battalion commander and staff continue to develop their estimates. [AN]
- 3g. When necessary, the engineer battalion commander and staff employ the MDMP in a time-constrained environment to conduct mission analysis using one of the following alternative methods: [FM 101-5 Chap 4]
 - 3g1 The engineer battalion commander personally conducts mission analysis.
 - 3g2 The engineer battalion commander and staff jointly conduct mission analysis in the form of a brainstorming session.

- 5. **The engineer battalion commander issues planning guidance.** [FM 101-5, Chap. 4 FM 5-71-3]
 - 5a. The engineer battalion commander develops planning guidance using: [FM 101-5, p. 4-16; FM 5-71-3 Chap 2]
 - 5a1 Supported maneuver brigade commander's planning guidance.
 - 5a2 Engineer brigade commander's guidance.
 - 5a3 Results of his own mission analysis and his mission, enemy, terrain, troops, and time available.
 - 5a4 Results of the engineer battalion staff mission analysis.
 - 5b. The engineer battalion XO prepares the battalion staff to receive the engineer battalion commander's guidance. [FM 101-5, p. 4-15]
 - 5b1 Determines who must be present.
 - 5b2 Ensures that the staff is prepared to take notes on guidance issued.
 - 5c. The engineer battalion commander's guidance focuses staff on: [FM 5-71-3 Chap 2]
 - 5c1 Identification, integration, and synchronization of tasks to support the engineer battalion missions assigned by the supported maneuver brigade.
 - a) Engineer battalion staff.
 - b) ABE section of maneuver brigade.
 - 5c2 Parallel planning between the ABE section and engineer battalion staff.
 - 5d. The engineer battalion commander issues guidance to the engineer staff that is complete and includes: [FM 5-71-3, p. 2-19; FM 101-5, Chap 4]
 - 5d1 Commander's intent. [FM 5-71-3, p. 2-19; FM 101-5, p. 4-18]

- a) Supported maneuver brigade and division commanders' intents.
 - b) His own intent, which includes:
 - (1) Purpose.
 - (2) Method.
 - (3) Endstate.
- 5d2 Restated mission for the engineer battalion. [FM 5-71-3, p. 2-19; FM 101-5, p. 4-18]
- a) Stated in doctrinally correct terms.
 - b) Explains missions as tasks and purposes.
- 5d3 Planning and operational timelines. [FM 101-5, p. 4-23]
- 5d4 Engineer battalion COAs to consider. [FM 5-71-3, p. 2-19]
- 5d5 Engineer battalion commander's CCIR for each phase of the operation, including: [BCBL Battle Command, p. 21; FN - USAES]
- a) EEFI.
 - b) FFIR.
 - c) PIR.
 - d) Instructions for incorporating engineer battalion CCIR into maneuver brigade CCIR, as appropriate.
- 5d6 Effects desired on enemy force. [FM 5-71-3, p. 2-19]
- 5d7 Risk assessment. [FM 5-71-3, p. 2-19]
- 5d8 Priorities. [FM 101-5, p. 4-22]
- a) Priorities of engineer tasks.
 - b) Priorities of additional engineer assets.
 - c) Priorities for equipment repair.
- 5d9 Time plan. [FM 101-5, p. 4-23]
- a) Time allocated for planning and preparation to the engineer battalion staff and to subordinate units.
 - b) The engineer battalion commander determines who, where, and how the engineer battalion OPORD will be issued.

- 5d10 Type of battalion order to issue; formats include: [FM 101-5, p. 4-24]
- a) FRAGO.
 - b) Oral order.
 - c) Overlay order.
 - d) Five paragraph.
- 5d11 Type of rehearsal to conduct; options include: [FM 101-5, p. 4-25]
- a) Backbrief.
 - b) Radio.
 - c) Map.
 - d) Sketch map.
 - e) Terrain model.
 - f) Key leader.
 - g) Full.
- 5d12 Any modifications to MDMP needed to cope with METT-T (e.g., time constraints). [FM 101-5, p. 4-16] [AN]
- 5d13 Rehearsals of brigade and other brigade units in which the engineer battalion will participate or observe. [AN]
- 5e. The engineer battalion commander conducts a confirmation brief at the end of his initial planning guidance to ensure that: [FM 101-5 p. 4-15, 16]
- 5e1 The information he has provided will result in timely and effective COA development and analysis.
- 5e2 The commander's vision of the scheme of engineer operation is imparted to the staff.
- 5e3 The guidance does not overly restrict staff initiative or ideas.
- 5f. The engineer battalion commander, when employing the MDMP in a time-constrained environment, issues planning guidance that: [FM 101-5 p. 4-16]
- 5f1 Shortens time by giving more detailed directive guidance.

- 5f2 Adds focus to staff planning by stating options he does not want considered.
6. **The engineer battalion commander and staff prepare staff estimates.** [FM 101-5, Chap. 4, App C]
- 6a. The engineer battalion commander develops his commander's estimate concurrently with the staff estimates being prepared by his engineer battalion staff. [FM 101-5 p. 4-3]
- 6a1 The engineer battalion commander integrates information from the mission analysis process into his updated commander's estimate which began at the receipt of mission.
- 6a2 The engineer battalion commander continues to refine his updated estimate over the duration of the operation.
- 6a3 The engineer battalion commander, during this task, focuses information related to paragraphs 1 and 2 of the commander's estimate.
- a) Mission.
 - b) The situation and COA.
- 6c. Upon receipt of an order (OPORD/WARNO) from higher headquarters initiating a mission, the engineer battalion staff begins to organize information in preparation for staff estimate process and begins the development of paragraphs 1 and 2 of its individual staff estimates. [FM 101-5, pp. 3-84 and App C]
- 6c1 The S1 gathers information for the personnel estimate.
- 6c2 The S2 gathers information to include standard and non-standard topographic products, and initiates development of part 1 and 2 of the EBA with the ABE and the engineer battalion S3.
- 6c3 The S3 gathers information for the engineer estimate (i.e., EBA).
- 6c4 The S4 gathers information for the logistics estimate.
- 6c5 The NBC NCO gathers information for the NBC estimate.

- 6c6 The Bn SO gathers information for the command, control, communications estimate.
- 6c7 All staff members begin to gather facts concerning:
 - a) Enemy dispositions.
 - b) Friendly dispositions.
 - c) Available troops.
 - d) Units strength.
 - e) Material readiness.
 - f) Battlefield situation.
- 6d. The engineer battalion commander and staff clarify information with their counterparts at engineer brigade. [AN]
- 6d1 Operational (e.g., tasks assigned to the engineer battalion).
- 6d2 Combat service support (e.g., requirements for additional maintenance support).
- 6e. Engineer battalion staff members prepare staff estimates in their areas of responsibility: [FM 101-5 Chap 4, App C]
- 6e1 Engineer battalion staff members begin the development of their estimates as early as possible (upon receipt of the division engineer unit WARNO). [AN]
- 6e2 Each engineer battalion staff member continually performs estimate activities. [FM 101-5 p. C-3]
- 6e3 Each engineer battalion staff member analyzes how factors in his respective staff area of responsibility will influence mission accomplishment. [FM 101-5 p. 4-4]
- 6e4 Engineer battalion staff members consult with other staff officers internally and externally to the engineer battalion to obtain critical, relevant, and accurate information. [FM 101-5 p. 4-4]
- 6e5 Engineer battalion staff members develop and maintain estimates that are forward looking and predictive of the enemy. [FM 101-5 p. C-2]
- 6e6 Each engineer battalion staff estimate focuses on identifying and answering the engineer battalion CCIR. [FM 101-5 p. C-4]

- 6e7 Engineer battalion staff members are prepared to present their estimates orally. [FM 101-5 p. 4-4]
- 6f. The engineer battalion S2, in coordination with the ABE, finalizes the EBA: [FM 5-71-3 Chap 2; ARTEP 5-145-MTP, 05-1-0027]
- 6f1 Analyzes weather impact on:
- a) Trafficability.
 - b) Water obstacles, e.g., depth, width, flow, rate, and bank conditions.
 - c) Ability to dig, or breach obstacles, or emplace obstacles.
 - d) Fog/limited visibility impact on obstacle positioning.
 - e) Employment of mines/demolitions in severe weather.
 - (1) Reliability.
 - (2) Effects.
- 6f2 Analyzes terrain for impacts on mobility operations.
- a) Observation and fields of fire.
 - (1) Identifies obscuration/location of support force for breaching.
 - (2) Assesses impacts on desired obstacle effects.
 - (3) Determines obstacle distance from direct fire systems.
 - b) Cover and concealment.
 - (1) Identifies obscuration/assault positions for breaches.
 - (2) Determines effects on survivability and deception operations.
 - c) Obstacles.
 - (1) Identifies locations and significance of existing and potential reinforcing obstacle locations.
 - (2) Assesses impact on countermobility/mobility requirements for the operation (e.g., effects of soil composition on ability to breach obstacles).
 - d) Key terrain.
 - (1) Identifies dominant terrain, ford sites, key bridges, and defiles.
 - (2) Recommends locations for indirect fire suppression and obscuration for breaching operations.
 - (3) Impacts of terrain on communications.
 - e) Avenues of approach.
 - (1) Identifies need for flank protection.

- (2) Determines requirements to improve trafficability.
- (3) Determines soil types encountered and ability to perform earthmoving operations.

6f3 Analyzes enemy engineer mission and mobility/survivability capabilities.

- a) Coordinates with supported maneuver brigade S2 to confirm baseline data: [FN - NTC Engr OCs]
 - (1) Order of battle.
 - (2) Enemy strength.
 - (3) Enemy dispositions.
- b) Uses supported maneuver brigade S2 intelligence preparation of the battlefield (IPB) database and assists in the development of the situational template to develop enemy engineer order of battle and capabilities.
- c) Templates enemy mobility/counter-mobility/survivability capabilities.
 - (1) Offense.
 - (a) Tactical obstacle effort.
 - (b) Protective obstacle effort.
 - (c) Scatterable minefields.
 - (d) NBC targets.
 - (2) Defense.
 - (a) Mobility capabilities and locations.
 - (b) Use of SCATMINEs.
 - (c) Use of NBC.
 - (d) High value targets.
 - 1 Bridging assets.
 - 2 Breaching assets.
 - (e) Engineer support of the reconnaissance effort.
- d) Evaluates recent enemy engineer activities and what enemy engineer has done in similar circumstances to identify strengths/weaknesses.
- e) Predicts possible enemy courses of action and the impact of the engineer situation on these courses of action.

6f4 Appraises friendly engineer missions and capabilities.

- a) Brigade's and task forces' missions.
- b) Task organizations for:
 - (1) Maneuver forces.
 - (2) Engineer forces.

- c) Availability of critical resources.
 - d) Engineer ability to accomplish the supported brigade's mission.
- 6f5 Develops from the above analyses the following intelligence preparation of the battlefield products:
 - a) Modified combined obstacle overlay (MCOO).
 - b) Situational template overlay of anticipated enemy obstacles, fortifications, and significant enemy engineer activities.
- 6f6 Provides the products to the engineer battalion commander, the battalion staff, ABE, the supported maneuver brigade S2, and subordinate engineer company commanders in a timely manner. [AN]
- 6f7 Orally briefs the assessment as required.
- 6g. The engineer battalion S3 and S3 section in coordination with the ABE prepare paragraphs 1 and 2 of the engineer estimate utilizing information from the S2's part 1 and 2 of EBA, and engineer battalion logistic/personnel estimates. Contents include³: [ARTEP 5-145-MTP 05-1-0002/1,2 and FM 5-100, p. 25; LL - Lessons Learned Bulletin, July 87]
- 6g1 Mission analysis and restated mission of engineer battalion.
- 6g2 Analysis of operations to be supported.
- 6g3 Weather and terrain impact on engineer options.
- 6g4 Enemy engineer situation.
- 6g5 Friendly brigade tactical situation.
- 6g6 Own engineer situation.
 - a) Task organization.
 - b) Dispositions.

³ The situational analysis (paragraph 2) of the engineer estimate has the same components and content as the EBA. The engineer battalion S3 is the overall staff proponent for its development. The engineer battalion S2 prepares the terrain analysis and enemy engineer assessment components and the S3 section prepares the friendly engineer assessment component with input from the S1 and S4 estimates and coordinates it with the ABE section.

- c) Levels of effectiveness (current and projected).
- d) Assessment of engineer capabilities.
 - (1) Productivity rates developed for each engineer resource (e.g., engineer platoon, Volcano, armored combat earthmover, mine clearing line charge [MICLIC], bulldozer, etc.) by type of requirement (e.g., numbers of M1 fighting positions, meters of minefield, meters of breached lane).
 - (2) Matrices or other tools that apply engineer resources available against identified requirements. Such tools track/display the following information:
 - (a) Consumption/commitment of engineer assets available.
 - (b) Start-finish times.
 - (c) Tradeoffs.
 - (3) Calculations of total projected engineer capability by requirement.
 - (4) Calculations of initial resourcing estimates of tentative brigade obstacle belts and assigned effects based on notational placement of obstacle groups. [FN - USAES]
 - (5) Assessment of capability to conduct in-stride and deliberate breaching operations.
- e) Status of current activities.
- f) Estimated completion times of current engineer tasks.
- g) Assumptions.

6g7 Logistics.

- a) Levels of Classes IV and V to support engineer operations through all phases of battle.
- b) Current and projected maintenance status of vehicles and weapons/engineer systems to include all mobility assets available to the maneuver brigade such as mine plows and rollers.
- c) Availability of transportation assets to support engineer operations.
- d) Disposition and locations of logistic units and facilities supporting engineer operations.

6g8 Combat status and capabilities of other force elements as provided by LNOs if an engineer battalion TF has been directed by the maneuver brigade. [AN]

6h. The engineer battalion NBC NCO prepares paragraphs 1 and 2 of the NBC estimate, which include: [FM 101-5 Chap 4, App C]

6h1 Available battalion NBC defense capabilities.

- a) Available chemical unit support.

- (1) Smoke platoon.
 - (2) Decontamination units/sites.
 - (3) NBC reconnaissance vehicles.
 - b) Status of NBC personnel.
 - c) Maintain status of on-hand NBC defense equipment.
 - d) Current status of NBC Class V.
 - (1) Fog oil.
 - (2) Smoke pots.
 - (3) Incendiaries.
- 6h2 Assessment of NBC defense capabilities.
 - a) Capability to provide smoke in terms of duration and density.
 - b) Capability to provide NBC reconnaissance in terms of space and time.
 - c) Decontamination on capabilities in terms of equipment and personnel.
- 6i. The engineer battalion S4, with input from the BMT, prepares paragraphs 1 and 2 of the logistics estimate, which include: [FM 101-5 Chap 4 App C]
- 6i1 S4 current and projected maintenance status.
 - a) DA Form 2406 report.
 - b) Repair parts (Class IX).
 - c) Maintenance asset locations and activities (unit maintenance collection point (UMCP), field trains).
 - d) Key maintenance personnel status.
 - e) Available DS and GS support.
 - f) BMT's assessment of capabilities in terms of strengths and weaknesses.
- 6i2 S4 current and projected logistics status.
 - a) Classes I, II, III, IV, V, VII, and VIII.
 - b) Logistics asset locations and activities (field trains, logistical packages (LOGPACs), combat trains).
 - c) Key logistics personnel status.
 - d) Available DS and GS support.
 - e) S4's assessment of capabilities in terms of strengths and weaknesses.

- 6i3 S4 assessment of logistics capability to support the battalion. [FM 101-5 Chap 4]
 - a) Organic and supporting transpiration capabilities to move and recover equipment and haul/delivery mission requirements of Class IV/V.
 - b) Organic and supporting maintenance capabilities to achieve/maintain operational readiness rates.
 - c) Adequacy of levels of all classes of supplies and services to sustain engineer battalion operations.
- 6j. The engineer battalion S1 prepares paragraphs 1 and 2 of the personnel estimate, which include: [FM 101-5 Chap 4, App C]
- 6j1 Personnel strength (personnel status).
- 6j2 Key personnel status.
- 6j3 Replacement projections.
- 6j4 Personnel service asset locations and activities.
 - a) Mail.
 - b) Finance.
 - c) Personnel administration center.
 - d) Post exchange.
 - e) Chaplain and/or religious ministry coverage.
 - f) Recreation services.
 - g) Mortuary affairs.
- 6j5 S1 current medical support status.
 - a) Medical treatment and evacuation support, DS and GS.
 - b) Class VIII status.
 - c) Key medical personnel status.
 - d) Available DS and GS support.
 - e) Assessment of capability for casualty treatment and evacuation in terms of strengths and weaknesses.
 - f) Stress assessment.
 - g) Rest plans.
- 6j6 S1 assessment of engineer status in terms of capability to support the battalion mission. [FM 101-5 Chap 4]

- a) Personnel replacement capability to maintain personnel strength in all military occupational specialties.
 - b) Personnel services capabilities to sustain morale and discipline.
- 6k. The engineer Bn SO prepares paragraphs 1 and 2 of the command, control, and communications estimate, which include: [FM 101-5 Chap 4, App C]
- 6k1 Current communications status and serviceability.
 - a) Secure and non-secure radio communications.
 - b) Retransmission capability and status.
 - (1) Location.
 - (2) Equipment.
 - c) Land lines installation status.
 - d) Communications with higher and adjacent units.
 - e) Bn SO's assessment of capability to support battalion.
 - f) Communications links from battalion CPs to brigade CPs and subordinate CPs.
 - g) Communications equipment status (secure and non-secure).
 - h) Signal operating instructions information.
 - i) Availability of communications personnel.
 - j) Communication requirements for CPs (current and projected locations).
 - k) Enemy electronic and communications capabilities.
 - l) Constraints, e.g., equipment capabilities (ranges, frequency ranges, dead spaces, atmospheric conditions).
- 6k2 Current and projected command/control requirements.
 - a) Location and activities.
 - (1) Supported maneuver brigade main CP/ tactical (TAC) CP.
 - (2) Engineer battalion main CP/TAC CP.
 - (3) Engineer battalion rear CP, field trains, and combat trains (if established).
 - (4) Maneuver battalion TF CPs (TF engineer).
 - b) Requirements to support other force elements under engineer battalion TF control.
- 6k3 Assessment of capability to support engineer battalion operations.
 - a) Communication capabilities to support engineer battalion operations in support of the brigade's TFs.
 - b) Communication capabilities of engineer battalion organized as engineer battalion TF.

- 6l. The engineer battalion XO guides the staff to continuously maintain and update forward-oriented time-charts and information. [FM 101-5 p. C-2]
- 6m. The engineer battalion commander requests staff information at any time to update his own commander's estimate. [FM 101-5 p. C-2]
- 7. **The engineer battalion commander and staff develop course(s) of action.** [FM 101-5 Chap. 4, App E; FM 5-71-3 Chap 2]
- 7b. The engineer battalion XO leads the engineer battalion staff in analyzing scheme of engineer operations (SOEO) and the supporting maneuver brigade COAs. Identifies: [FN - USAES] (See also Task 8 of this analysis.)
- 7b1 Problems with engineer support of the maneuver brigade COAs.
- 7b2 Coordination requirements to be included in maneuver brigade synchronization matrix.
- 7b3 Information requirements for the maneuver brigade DST.
- 7c. The engineer battalion XO provides the ABE with information resulting from engineer battalion analysis for use during brigade war-gaming. [FN - USAES]
- 7d. The engineer battalion S3 communicates the selected brigade COA, its supporting scheme of engineer operations, and the supported maneuver brigade war-gaming notes to the engineer battalion commander and/or XO. [AN]
- 7e. The engineer battalion S3 rejoins the engineer battalion staff for battalion COA development after brigade COA is selected. [AN]
- 7f. The engineer battalion commander and/or the engineer battalion S3 develop COA considering: [AN] (See also the preface to this analysis.)
- 7f1 Critical tasks assigned to the engineer battalion.
- 7f2 Scheme of engineer operations.

- 7f3 War-gaming notes from the supported maneuver brigade COA analysis.
- 7g. COAs are developed using doctrinally correct procedures, which include: [FM 101-5, p. 4-26 and App E]
 - 7g1 Analyzing relative combat power/engineer capabilities.
 - 7g2 Arraying initial forces/engineer assets.
 - 7g3 Developing a concept of engineer battalion operation.
 - 7g4 Incorporating a scheme of maneuver if an engineer battalion TF is being considered.
 - 7g5 Determining essential tasks that will permit engineer battalion/engineer battalion TF to accomplish its mission.
 - 7g6 Determining command and control measures.
 - 7g7 Developing a course of action statement and sketch.
- 7h. The engineer battalion S3, in conjunction with the staff, develops COAs that are: [FM 101-5, App E]
 - 7h1 Suitable:
 - a) Accomplish the mission.
 - b) Focused on the restated mission.
 - c) Consistent with SOEO developed in maneuver brigade MDMP. [AN]
 - 7h2 Feasible: the unit has the required resources (e.g., time, blade hours, platoon hours, special equipment, mission supplies of Class IV/V).
 - 7h3 Acceptable level of risk to mission accomplishment and in terms of loss of personnel, time, material, or capability.
 - 7h4 Distinguishable, as identified at a minimum by:
 - a) The task organization.

- b) The concept of engineer operations.
- 7h5 Complete, in that each addresses:
 - a) What elements will execute the action (who).
 - b) Type of action contemplated to include battalion essential tasks (what).
 - c) Time engineer operation begins (when).
 - d) Location (where).
 - e) Method of conducting the engineer battalion operation (how).
 - f) The engineer battalion commander's intent (why).
- 7i. At least two COAs are developed unless time or the commander's guidance dictates only one. [ARTEP 5-145-MTP 05-1-0002/3]
- 7j. The engineer battalion S2 develops, refines, and provides necessary intelligence products to the engineer battalion S3. [ARTEP 71-3-MTP, Task 71-3-2001/3a; FM 34-8, p. 3-13]
- 7j1 Enemy situation template which depicts relevant enemy COAs that could affect the engineer battalion.
- 7j2 Terrain and weather analysis.
- 7k. Engineer battalion staff members integrate their functional area COAs into the S3 COAs: [FM 101-5, p. 4-26]
- 7k1 The S1 identifies personnel courses of action which can support the concept of engineer operation identified by each S3 COA.
- 7k2 The S4 identifies logistic courses of action (including maintenance input from the BMT) which can support the concept of engineer operation identified by each S3 COA.
- 7k3 The Bn SO develops COA to support each S3 COA.
- 7k4 The NBC NCO develops COA to support each S3 COA.

- 7l. LNOs from other force elements placed OPCON to the engineer battalion TF (e.g., mechanized infantry company/team commander, fire support team OIC, chemical smoke platoon leader, air defense artillery (ADA) platoon leader, military police (MP) platoon leader) provide functional input about their units for the S3 COA. [AN]
- 7m. The engineer battalion S3, in coordination with engineer battalion XO, develops COA sketches or other means to display the COAs for presentation during analysis of COAs. [FM 101-5, p. E-16]
- 7n. When the MDMP is used in a time-constrained environment, the engineer battalion commander adheres to doctrine in developing COAs, and may: [FM 101-5, p. 4-44]
 - 7n1 Limit the number of COAs to be considered.
 - 7n2 Give the staff a specific COA or more specific guidance on how to develop COAs.
 - 7n3 Remain with the staff and develop the COA(s).
 - 7n4 Develop the COA(s) by himself.
- 8. **The engineer battalion commander and staff analyze course(s) of action.** [FM 5-71-3 Chap 2; FM 101-5, p. 4-28, App F]
 - 8a. The commander and staff use a previously trained procedure for war game. [FM 101-5, App F]
 - 8a1 Belt.
 - 8a2 Box.
 - 8a3 Avenue.
 - 8a4 Any other technique that has been developed and in which the staff is trained.
 - 8b. The engineer battalion XO supervises the staff in conducting the war-gaming sequence: [FM 101-5, App F]
 - 8b1 Gather the tools, materials, and data:

- a) Post COAs on a map as appropriate.
 - b) Post enemy template.
 - c) Post current friendly unit dispositions.
 - d) Develop other information/data displays.
- 8b2 List all friendly forces.
- a) Assigned, attached, OPCON.
 - b) Support relationships.
 - c) Constraints and restrictions from higher headquarters.
 - d) Priority of engineer support.
 - e) Multipliers such as additional equipment (plows rollers)/ manpower available from other units/sources.
- 8b3 List the assumptions.
- a) Assumptions from supported maneuver brigade OPORD.
 - b) Enemy options and activities that could impact engineer operations.
 - c) Friendly strengths and activities.
- 8b4 List known critical events and anticipated decision points for the engineer operation.
- 8b5 List significant factors.
- a) Timelines.
 - b) Phasing requirements.
 - c) Weather/terrain.
 - d) Sustainment capabilities/requirements.
 - e) Other identified factors.
- 8b6 Select the war-gaming method.
- 8b7 Select a technique to record and display the war game results.
- a) Narrative.
 - b) Sketch notes.
 - c) Execution matrix.

- 8b8 War-game and assess the results by:
 - a) Using action/reaction/counteraction drills against enemy; or
 - b) Conducting an advantages/disadvantages analysis of one COA relative to another based upon an evaluation of the impacts of significant factors.
- 8c. The engineer battalion commander, XO, or S3 presides over the war-gaming of each developed course of action for the engineer battalion mission; ensures that: [FM 101-5 App F; ARTEP 5-145-MTP, 05-1-0002/4a]
- 8c1 Each COA is war-gamed against:
 - a) The enemy.
 - b) Other significant criteria.
- 8c2 Each COA is well integrated with the selected brigade COA.
- 8c3 Entire staff and LNOs are present, if available.
- 8c4 Staff members have current estimate for their areas of responsibility.
- 8c5 Staff members have planning factors and other tools to enable them to compute consumption of resources during the war game.
- 8c6 War game notes are kept by means such as a synchronization or execution matrix.
- 8c7 Advantages and disadvantages are listed as they are identified.
- 8c8 Staff members and LNOs actively participate in the war game.
- 8c9 Staff remains unbiased.
- 8c10 Premature conclusions are not drawn.
- 8c11 Feasibility is continually assessed and analysis stops if COA becomes infeasible.

- 8d. The engineer battalion XO ensures that the staff fully explores each COA during war-gaming to include as appropriate (arranged by battlefield operating system [BOS]): [FM 101-5, App F; LL - CTC Bulletin No. 95-4]
- 8d1 General. [FM 5-71-3, pp. 2-20 - 2-23]
- a) Identify strengths and weaknesses of COA.
 - b) Adjustments to COA.
 - (1) Shift available engineer assets.
 - (2) Identify additional engineer or other assets needed.
 - c) Task organization.
 - d) The engineer battalion XO, with input from the S3, develops the operational timeline which describes mission execution events. [AN]
- 8d2 Command and control. [FM 5-71-3, pp. 3-4, 4-3]
- a) Required coordination with adjacent and supported units.
 - b) Critical engineer events and timing.
 - c) Decision points for engineer operations.
 - d) Command/support relationships.
 - e) Communication requirements and priorities.
 - f) Command and control positioning/repositioning during phases of operations.
 - (1) Engineer battalion main CP.
 - (2) Engineer battalion rear CP.
 - (3) Engineer battalion TAC CP.
 - (4) Engineer battalion command group (if not at TAC CP).
 - g) Engineer battalion TF unique C2 requirements are identified.
- 8d3 Intelligence. [FM 5-71-3, pp. 3-4, 4-3]
- a) Identify any additional NAIs, TAI requirements not accomplished in the supported maneuver brigade war-gaming.
 - b) Identify additional engineer reconnaissance requirements not accomplished in supported maneuver brigade war-gaming.
 - c) Limited visibility, soil, terrain, and hydrographic considerations on engineer operations.
 - d) Requirements for TerraBase products to support engineer operations.
- 8d4 Maneuver. [FM 5-71-3, pp. 3-4, 4-3]

- a) Linkups with other force elements supporting engineer battalion TF.
 - (1) Location.
 - (2) Time.
- b) Routes to be used to position engineer battalion elements.
- c) Passage of lines if required.
- d) Control measures.
- e) Movement times and distances to position/reposition engineer assets.
- f) Identify tasks for supporting combat elements in engineer battalion TF operations.

8d5 Mobility and survivability. [FM 5-71-3, pp. 3-4, 4-3]

- a) Obstacle integration. [FM 90-7, Chap 4]
 - (1) Plan obstacle belts to support each maneuver COA, based on:
 - (a) Division obstacle control measures (e.g., zones).
 - (b) Maneuver brigade commander's intent for obstacles.
 - 1 Target.
 - 2 Obstacle effect (e.g., turn, fix, block, disrupt).
 - 3 Time and assets available.
 - (2) Array tentative obstacle control measures (e.g., groups).
 - (3) Identify restrictions required for mobility.
 - (4) Resource obstacle groups by:
 - (a) Requirements.
 - (b) Capabilities (used for initial calculations of estimates of Class IV/V materials).
 - (c) Required times.
 - (5) Identify priorities for obstacles if requirements exceed capabilities.
 - (6) Modify/refine the obstacle plan as required.
 - (a) Size of belts.
 - (b) Locations of belts and Class IV/V supply points.
 - (c) Situational obstacle requirements.
 - (d) Reserve obstacle requirements.
 - (e) Directed obstacle requirements.
 - (f) Taskings to units.
 - (g) Additional resources required.
- b) Survivability construction. [FM 5-103, Chap 2].

- (1) Brigade commander's priorities for survivability protection based on vulnerability analysis.
 - (a) Unit.
 - (b) Weapons, equipment, and facilities.
 - (c) Required times.
- (2) Time available:
 - (a) Prior to development of direct fire plan by maneuver battalion TFs to maximize the protective position construction effort (e.g., artillery, C2 nodes, CSS assets).
 - (b) After development of direct fire plans to construct fighting positions.
- (3) Constraints to digging production.
 - (a) Competing requirements for digging assets to support mobility/ countermobility requirements.
 - (b) Soil conditions classified as dig/no dig.
 - (c) Weather and light conditions impacts.
 - (d) Movement requirements of digging assets.
 - (e) Equipment availability.
 - (f) Equipment maintenance procedures.
 - (g) Alternate operators for continuous operations.
 - (h) Selection of type positions (i.e., two tier vice modified two tier).
- (4) Siting requirements and coordination. [FM 101-1, Chap 7]
- c) Combat road and trail construction. [FM 101, Chap 7]
 - (1) Engineer effort required to support movement of logistics from BSA to maneuver unit trains.
 - (2) Engineer effort required to maintain maneuver units' mobility.
 - (a) Bypass construction as an alternative to breaching obstacles.
 - (b) Rubble clearing in built-up areas.
- d) River crossing (hasty).⁴ [FM 90-13, Chap 6]
 - (1) Crossing site evaluations (primary and alternate).
 - (2) Entry and exit bank preparations.
 - (3) Type of bridging and configuration.
 - (4) Control measures.
 - (a) Traffic control.

⁴ This consideration is intended for decentralized river crossings controlled by the maneuver brigade, which is a feature of hasty crossings. According to FM 90-13, the brigade may use organic, existing, or any available crossing means, but additional support from division or corps is often necessary. In this context the engineer battalion may be responsible for the crossing sites and means. Planning considerations for a hasty crossing are the same as a deliberate crossing.

- (b) Engineer regulation.
 - (5) Crossing plan and movement schedule.
- e) Breaching operations. [FM 90-13-1, Chap 4]
 - (1) Obstacle intelligence. [FM 90-13-1, p. 2-2]
 - (a) Obstacle types and orientation.
 - (b) Minefield types and locations of leading edges.
 - (c) Enemy fortifications.
 - (2) Actions on objective.
 - (a) Size and composition of assault force.
 - (b) Requirements for assault breaching of protective obstacles.
 - (3) Lane requirements.
 - (a) Number based on size of assault force.
 - (b) Locations.
 - (c) Marking.
 - (d) Widening/improvement.
 - (e) Handover to follow-on forces.
 - (4) Breaching asset allocation per lane based on 50% redundancy.
 - (a) Armor plows and rollers.
 - (b) Engineer breaching equipment.
 - (5) Task organization of the breach force.
 - (6) Direct fire plans for the breach force.
 - (7) Battle drills to be used in breaching.
 - (8) Traffic control measures.
 - (9) Crossing plan.
 - (10) Coordination with support force.
 - (a) Suppression of direct fires.
 - (b) Obscuration.
 - (c) Indirect fire suppression.
 - (11) Coordination with assault force for passing through lanes.
 - (12) Rehearsal planning.
 - (a) Site selection.
 - (b) Layout requirements to replicate obstacles.
- f) Identification of tasks for all subordinate units. [AN]

- g) Phasing of engineer tasks. [AN]
 - h) Completion times for all tasks. [AN]
 - i) MOPP and NBC operations. [AN]
- 8d6 Fire support. [FM 5-71-3, pp. 3-4, 4-3]
- a) Fire support for engineer battalion TF maneuver.
 - b) Fire support for engineer work sites.
 - c) Critical fire zones for breaching and river crossing sites.
 - d) Scatterable mine employment.
- 8d7 Air defense. [FM 5-71-3, pp. 3-4, 4-3]
- a) Positioning supporting air defense elements at breach sites, gap crossing sites, Class IV/V points.
 - b) Early warning requirements.
 - c) Weapons status during engineer operations.
 - d) Direct fire systems in air defense role at work sites.
- 8d8 Combat service support. [FM 5-71-3, pp. 3-4, 4-3, Chap 6]
- a) CSS requirements:
 - (1) Critical classes of supply.
 - (2) Supply priorities.
 - (3) Maintenance support requirements and priorities.
 - (a) UMCP locations.
 - (b) Maintenance recovery.
 - (4) Transportation requirements and priorities.
 - b) Class IV/V supply point considerations to support engineer work sites.
 - (1) Class IV/V supply point locations.
 - (2) Class V prepositioning/cache locations.
 - (a) MICLIC reloads.
 - (b) Volcano reloads.
 - c) Medical support requirements:
 - (1) Casualty estimates.
 - (2) Medical treatment and evacuation.
 - d) EPW evacuation and support.

- e) Unique logistic requirements to support engineer battalion TF operations.
- 8f. The engineer battalion commander and key staff (XO, S3) determine acceptable levels of risk based on COA selected following these steps: [FM 101-5, p. 4-31]
 - 8f1 Identify hazards associated with major events.
 - 8f2 Assess hazards (operational and safety).
 - 8f3 Make risk assessments regarding mission accomplishment and safety.
 - 8f4 Implement controls to mitigate risk.
- 8g. When war-gaming does not produce needed information, or if information is unclear, the responsible staff officer aggressively pursues needed information. [AN]
- 8h. Upon completing COA war-gaming, the engineer battalion XO ensures that: [CTC Bulletin No. 95-4]
 - 8h1 War-gaming notes are completed.
 - 8h2 COA timelines and requirements are understood.
- 8i. War-gaming during the MDMP in a time-constrained environment may be conducted and supervised by the engineer battalion XO and includes: [FM 101-5 p. 4-42]
 - 8i1 Performing all the steps of the war-gaming.
 - 8i2 Adhering to all the required principles.
 - 8i3 Having as many of the staff present with the commander as possible, given the tactical situation.
 - 8i4 Considering all staff and LNO functional areas.

- 8i5 Setting aside as much time as possible.
- 8i6 Commander is present and involved.
- 8i7 Using less time consuming methods such as the critical points (box method).
- 9. **The engineer battalion staff compares courses of action.** [FM 101-5, p. 4-32]
 - 9a. The engineer battalion XO supervises comparisons of COA by the staff and LNOs ensuring: [FM 101-5 p. 4-32]
 - 9a1 Use of commander's previous guidance on comparison criteria.
 - 9a2 Use of criteria and weighting selected to build a decision matrix.
 - 9b. Each battalion staff officer prepares a COA decision matrix for his own BOS that identifies which COA can best be supported from that BOS standpoint. [FM 101-5, p. 4-32]
 - 9c. The battalion S3 identifies the best COA to recommend to the battalion commander. [FM 101-5, p. F-38]
 - 9c1 Each battalion staff member presents his assessments to the other staff members for consideration.
 - 9c2 The battalion S3 chooses which COA will produce success if the staff is unable to reach a consensus.
 - 9c3 The battalion staff prepares necessary briefing charts for the COA brief to the commander.
 - 9c4 The staff prepares updated estimate notes for their respective areas.
 - 9c5 The battalion S3 prepares a list of assumptions for each COA.
 - 9c6 The battalion S3 ensures that a COA sketch with implementation statements has been prepared for each COA.
 - 9c7 The battalion S3 ensures that the wargame notes or worksheets are prepared.

- 9d. The engineer battalion XO or S3, with staff and LNOs present, briefs the engineer battalion commander on the results of the COA comparison, which include: [FM 5-71-3, Chap 2; FM 101-5, p. 4-33]
 - 9d1 The intents of division and brigade commanders.
 - 9d2 The battalion restated mission.
 - 9d3 The status of battalion forces.
 - 9d4 The updated intelligence estimate.
 - 9d5 Own courses of action:
 - a) Assumptions used in the wargame.
 - b) Results of staff estimate.
 - c) Advantages and disadvantages of each COA.
 - 9d6 Recommended COA.
 - 9d7 Branches to each COA.
 - 9d8 Unresolved issues.
 - 9d9 Dissenting staff positions.
- 9e. The engineer battalion commander makes a decision based on: [FM 5-71-3 Chap 2, FM 101-5 p. 4-33, 34]
 - 9e1 His experience.
 - 9e2 His trust and confidence in his personnel and his knowledge of his battalion's present capabilities.
 - 9e3 His estimate of the situation.
 - 9e4 The inherent flexibility of the selected COA.

- 9e5 The supported maneuver brigade commander's announced decision.
NOTE: The engineer battalion commander may agree with the staff-recommended COA, modify it, or select another COA, although he must consider the additional staff work required if other than staff-recommended COA is chosen.
- 9f. Once the battalion commander has selected the COA to be employed, the XO leads the staff in war-gaming branches of the COA selected. [Command and General Staff College (CGSC) Student Text (ST) 101-5, Feb 95, p. 4-32]
- 9g. The engineer battalion commander, when required, employs the MDMP in a time-constrained environment by: [FM 101-5, p. 4-42]
- 9g1 Having available generic COA decision/comparison matrices to save time.
- 9g2 Reducing the number of comparison criteria.
- 9g3 Personally conducting the COA comparison.
10. **The engineer battalion commander announces his decision.** [FM 101-5, Chap. 4]
- 10a. The engineer battalion commander announces his COA decision by: [FM 101-5 p. 4-35]
- 10a1 A clear, concise statement of his intent and concept of operation.
- 10a2 Stating the who-what-when-where-how-and why associated with the COA.
- 10a3 Stating the risk he is willing to accept to:
a) Retain engineer capabilities.
b) Complete engineer tasks.
- 10a4 The engineer battalion commander specifies the battalion task organization. [FM 101-5 p. 4-35]
- 10a5 The engineer battalion commander specifies the command and support relationships of engineer companies/elements. [FM 101-5, p. 4-35]

- a) By phase of operation.
 - b) With supported maneuver elements.
- 10b. The engineer battalion S3 returns to the ABE section and integrates the engineer battalion selected course of action into the final scheme of engineer operations stated in the supported maneuver brigade OPORD. [AN]
- 10c. The engineer battalion commander and staff conduct reconnaissance to confirm selected COA and make necessary modifications. [FM 101-5, p. 4-44; FM 5-71-3 pp. 2-19, 23]
- 10d. During the MDMP time-constrained environment, the battalion commander's decision is announced with the same precision, completeness, and clarity as in a more deliberate process. [FM 101-5, Chap 4, p. 4-44]
- 11. **The engineer battalion staff prepares the operations order.** [ARTEP 5-145-MTP 05-1-0007, FM 5-71-3 Chap 2 and App D; FM 101-5, Chap. 4]
 - 11a. The engineer battalion commander and selected staff attend the supported maneuver brigade order and confirmation briefs. [FM 5-71-3, Chap 2]
 - 11b. The engineer battalion receives a written copy of supported brigade OPORD prior to preparing engineer battalion OPORD. [AN]
 - 11c. The engineer battalion XO and staff individually review brigade OPORD to: [AN]
 - 11c1 Find necessary information for preparing their portion of the battalion order not previously determined. [AN] (See task 6.b.4)
 - 11c2 Confirm and cross check information previously obtained through coordination in parallel planning. [AN]
 - 11i. The engineer battalion XO supervises the production of the OPORD and: [ARTEP 5-145 MTP, 05-1-0007/4a]
 - 11i5 The engineer battalion XO submits OPORD to commander for approval.
 - 11i6 The engineer battalion XO coordinates OPORD with adjacent units.
 - a) Briefs and employs liaison officers.

- b) Adjusts based on coordination.

OUTCOME 2 ASSESSMENT

OUTCOME 2: Engineer battalion orders are received in no more than 1/3 of the available time and understood by key participants.	Adequate	Marginal	Not Adequate
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(Use Tables 1, 2, 9, and 10)

Assessment Statements

- The division engineer commander issues a WARNO to units immediately after the division maneuver commander issues his planning guidance.
 - C WARNOs provide essential details of the impending operation.
 - C WARNOs detail major timeline events which accompany mission execution.
 - C WARNOs clearly inform the recipient of what tasks he must do now as well as possible future tasks.
 - C WARNOs contain the time and place of OPORD issuance.
- The engineer battalion staff issues an OPORD to key participants in accordance with TSOP and to those units remaining with the battalion (i.e., not OPCONed or attached to a maneuver TF or maneuver brigade).
- Key participants correctly brief back their mission and the commander's intent two echelons up.
- Subordinates begin their parallel planning as soon as they receive sufficient information.

OUTCOME 2 DIAGNOSTIC AID

OUTCOME 2: Engineer battalion orders are received in no more than 1/3 of the available time and understood by key participants.

Task Elements

- 2. **The engineer battalion receives an order initiating a new mission from higher headquarters.** [FM 101-5; FM 5-71-100, FM 5-71-3]
 - 2a. The engineer battalion commander as the brigade engineer attends the division orders brief in accordance with supported maneuver brigade TSOP. [AN]
 - 2a1 Receives any additional guidance and information after briefing from engineer brigade commander and staff.
 - 2b. The engineer battalion receives a WARNO. (The engineer battalion may receive a WARNO from the engineer brigade and from the supported maneuver brigade. [FM 5-71-3 Chap 2; FM 5-71-100, B-13])
 - 2b1 When a WARNO from the engineer brigade is received prior to the division OPORD briefing, the engineer battalion XO informs the engineer battalion commander of the content of the WARNO. [FM 5-71-3 Chap 2; FM 5-71-100, B-13]
 - 2b2 When a supported maneuver brigade WARNO is received, the engineer battalion XO informs the engineer battalion commander of the content of the WARNO. [FM 5-71-3 Chap 2; FM 101-5, PH-14]
 - 2d. The engineer battalion XO initiates the process to inform the engineer battalion staff on the content of the WARNOs/OPORDs as they are received. Staff begins planning in parallel with the brigade. [AN]
 - 2d1 Conducts “staff huddles.”
 - 2d2 Initiates staff estimate process.
 - 2d3 Directs coordination of staff sections.
 - 2d4 Directs new information as it is received to the appropriate staff section.

- 2e. The engineer battalion S3 section obtains copies of higher headquarters written OPORDs/WARNOs and provides an advance copy to the engineer battalion rear CP; receives: [ARTEP 5-145-MTP 05-1-0018/4a(2)(c); FN - NTC Engr OCs]
- 2e1 Division OPORD with engineer annex from assistant brigade engineer (ABE) section.
- 2e2 Division engineer unit WARNO/OPORD from engineer brigade by courier or electronic means.
- 2e3 Supported maneuver brigade WARNO from maneuver brigade S3 section.
- 2f. The engineer battalion rear CP coordinates with supported maneuver Bde S4 and FSB support operations section to obtain a copy of the division OPORD. [FN-NTC Engr OCs]
- 2g. The engineer battalion XO tracks the supported maneuver brigade planning in order to conduct parallel planning in the engineer battalion main CP. [FM 5-71-3 Chap 2]
- 2g1 Coordinates with supported maneuver brigade XO for planning timelines.
- 2g2 Receives status of brigade planning timelines from the ABE section.
- 2i. The engineer battalion S3 OIC of the ABE section) and the engineer battalion XO coordinate closely to support parallel planning and facilitate information flow. [FM 5-71-3 p. 2-22]
- 2i1 The engineer battalion S3 provides the engineer battalion XO and staff with timely information concerning:
 - a) Supported maneuver brigade mission analysis.
 - b) Supported maneuver brigade commander's planning guidance.
 - c) Supported maneuver brigade COA development.
 - d) Supported maneuver brigade war-gaming results.
 - e) Supported maneuver brigade commander's COA decision.
- 2i2 The engineer battalion XO and staff provide support to the ABE section concerning:
 - a) Engineer mission analysis.
 - b) EBA.
 - c) Analysis of SOEO and supporting maneuver brigade COAs.

- 2j. The engineer battalion XO directs the efforts of the engineer battalion staff in preparation for implementing the MDMP. [FM 5-71-3 Chap 2]
- 2j1 Upon receipt of a higher headquarters order, the engineer battalion XO develops a planning and preparation timeline for the staff.
- 2j3 The engineer battalion XO prepares to issue an initial WARNO to all engineer battalion subordinate units. (See also Task 4 of this analysis.)
- 2m. The engineer battalion commander and staff implement, when required, the MDMP in a time-constrained environment by employing time-reducing measures such as collocating the engineer battalion main CP with the supported maneuver brigade main CP. [AN]
- 3. **The engineer battalion commander and staff conduct mission analysis.** [ARTEP 5-145-MTP, 05-1-0002; FM 101-5 Chap 4, FM 5-71-3 Chap 2]
- 3b. The engineer battalion staff members individually conduct mission analyses of higher HQ missions and higher commanders' intents, utilizing the division OPORD engineer annex, division engineer unit WARNO, and the supported maneuver brigade's WARNO to determine: [FM 101-5, p. 4-11, FM 5-71-3, Chap 2; LL- CALL Newsletter No. 93-3, p. 4]
- 3b7 Time analysis:
 - a) Planning timeline that includes items such as:
 - (1) Issue WARNO.
 - (2) Prepare staff estimates.
 - (3) Develop COAs.
 - (4) Announce COA decision.
 - (5) Prepare written copy of engineer battalion OPORD.
 - b) Operational timelines that include such items as:
 - (1) Supported maneuver brigade and engineer battalion TF OPORD briefings, when determined.
 - (2) Time of engineer battalion OPORD briefing.
 - (3) Rehearsals.
 - (a) Supported maneuver brigade.

- (b) Engineer battalion.
- (c) Maneuver battalion TFs, as appropriate.
- (4) Movement times.
- (5) Line of departure or prepare to defend times.
- (6) Hours of darkness or limited visibility.

- 3d. The engineer battalion XO briefs the battalion commander on the results of the staff mission analysis. [FM 101-5, p. 4-14 and App D, FM 5-71-3, Chap 2]
- 3d7 Time analysis.
 - b) Timeline for engineer battalion staff planning process.
- 3e. The engineer battalion commander based on his own mission analysis and the mission analysis brief from the engineer battalion staff: [FM 101-5, p. 4-15]
- 3e3 Directs the issuance of a WARNO.
- 3g. When necessary, the engineer battalion commander and staff employ the MDMP in a time-constrained environment to conduct mission analysis using one of the following alternative methods: [FM 101-5 Chap 4]
- 3g1 The engineer battalion commander personally conducts mission analysis.
- 3g2 The engineer battalion commander and staff jointly conduct mission analysis in the form of a brainstorming session.
- 4. **The engineer battalion executive officer directs the staff in the preparation and issuance of an engineer battalion warning order.** [FM 5-71-3 Chap 2]
- 4a. The engineer battalion XO ensures that the engineer battalion WARNOs are prepared and issued in the 5-paragraph format. [FM 101-5, p. H-13]
- 4b. The engineer battalion staff, under the supervision of the engineer battalion XO, prepares the WARNO, which includes critical information available at the time for WARNO. [FM 5-71-3, Chap 2] (Normally a minimum of three WARNOs are issued during the conduct of the MDMP.)

- 4c. The engineer battalion XO ensures that the WARNO is sent by the S3 section to: [FM 5-71-3 Chap 2]
- 4c1 All subordinate engineer companies, regardless of command/support relationships.
- 4c2 The headquarters and headquarters company (HHC) commander.
- 4c3 All attached/supporting units.
- 4c4 All engineer battalion staff members.
- 5. **The engineer battalion commander issues planning guidance.** [FM 101-5, Chap. 4 FM 5-71-3]
- 5a. The engineer battalion commander develops planning guidance using: [FM 101-5, p. 4-16; FM 5-71-3 Chap 2]
- 5a3 Results of his own mission analysis and his mission, enemy, terrain, troops, and time available.
- 5c. The engineer battalion commander's guidance focuses staff on: [FM 5-71-3 Chap 2]
- 5c2 Parallel planning between the ABE section and engineer battalion staff.
- 5d. The engineer battalion commander issues guidance to the engineer staff that is complete and includes: [FM 5-71-3, p. 2-19; FM 101-5, Chap 4]
- 5d9 Time plan. [FM 101-5, p. 4-23]
 - a) Time allocated for planning and preparation to the engineer battalion staff and to subordinate units.
 - b) The engineer battalion commander determines who, where, and how the engineer battalion OPORD will be issued.
- 5e. The engineer battalion commander conducts a confirmation brief at the end of his initial planning guidance to ensure that: [FM 101-5 p. 4-15, 16]
- 5e1 The information he has provided will result in timely and effective COA development and analysis.

- 5e2 The commander's vision of the scheme of engineer operation is imparted to the staff.
- 5e3 The guidance does not overly restrict staff initiative or ideas.
- 5d12 Any modifications to MDMP needed to cope with METT-T (e.g., time constraints). [FM 101-5, p. 4-16] [AN]
- 5f. The engineer battalion commander, when employing the MDMP in a time-constrained environment, issues planning guidance that: [FM 101-5 p. 4-16]
 - 5f1 Shortens time by giving more detailed directive guidance.
 - 5f2 Adds focus to staff planning by stating options he does not want considered.
- 6. **The engineer battalion commander and staff prepare staff estimates.** [FM 101-5, Chap. 4, App C]
 - 6a. The engineer battalion commander develops his commander's estimate concurrently with the staff estimates being prepared by his engineer battalion staff. [FM 101-5 p. 4-3]
 - 6b. Upon receipt of an order (OPORD/WARNO) from higher headquarters initiating a mission, the engineer battalion commander begins his estimate. [FM 101-5 Chap 4 and App C]
- 7. **The engineer battalion commander and staff develop course(s) of action.** [FM 101-5 Chap. 4, App E; FM 5-71-3 Chap 2]
 - 7a. Engineer battalion XO obtains supported maneuver brigade's COAs as that information emerges:
 - 7a1 ABE furnishes brigade COA sketches with supporting SOEOs as developed during brigade development of COAs. [AN]
 - 7a2 The engineer battalion S3 communicates the selected brigade COA, its SOEO, and the brigade's war-gaming notes after the brigade commander's decision. [AN]
 - 7n. When the MDMP is used in a time-constrained environment, the engineer battalion commander adheres to doctrine in developing COAs, and may: [FM 101-5, p. 4-44]

- 7n1 Limit the number of COAs to be considered.
- 7n2 Give the staff a specific COA or more specific guidance on how to develop COAs.
- 7n3 Remain with the staff and develop the COA(s).
- 7n4 Develop the COA(s) by himself.
- 8. **The engineer battalion commander and staff analyze course(s) of action.** [FM 5-71-3 Chap 2; FM 101-5, p. 4-28, App F]
 - 8d. The engineer battalion XO ensures that the staff fully explores each COA during war-gaming to include as appropriate (arranged by BOS): [FM 101-5, App F; LL - CTC Bulletin No. 95-4]
 - 8d1 General. [FM 5-71-3, pp. 2-20 - 2-23]
 - d) The engineer battalion XO, with input from the S3, develops the operational timeline which describes mission execution events. [AN]
 - 8i. War-gaming during the MDMP in a time-constrained environment may be conducted and supervised by the engineer battalion XO and includes: [FM 101-5 p. 4-42]
 - 8i1 Performing all the steps of the war-gaming.
 - 8i2 Adhering to all the required principles.
 - 8i3 Having as many of the staff present with the commander as possible, given the tactical situation.
 - 8i4 Considering all staff and LNO functional areas.
 - 8i5 Setting aside as much time as possible.
 - 8i6 Commander is present and involved.
 - 8i7 Using less time consuming methods such as the critical points (box method).

- 9. **The engineer battalion staff compares courses of action.** [FM 101-5, p. 4-32]
 - 9g. The engineer battalion commander, when required, employs the MDMP in a time-constrained environment by: [FM 101-5, p. 4-42]
 - 9g1 Having available generic COA decision/comparison matrices to save time.
 - 9g2 Reducing the number of comparison criteria.
 - 9g3 Personally conducting the COA comparison.
- 10. **The engineer battalion commander announces his decision.** [FM 101-5, Chap. 4]
 - 10d. During the MDMP time-constrained environment, the battalion commander's decision is announced with the same precision, completeness, and clarity as in a more deliberate process. [FM 101-5, Chap 4, p. 4-44]
- 11. **The engineer battalion staff prepares the operations order.** [ARTEP 5-145-MTP 05-1-0007, FM 5-71-3 Chap 2 and App D; FM 101-5, Chap. 4]
 - 11d. The engineer battalion staff, under supervision of the engineer battalion XO, develops a WARNO that includes critical information based on results of COA analysis and engineer battalion commander's decision. [FM 5-71-3, Chap 2]
 - 11e. The engineer battalion S3 section issues the WARNO. [FM 5-71-3, Chap 2]
 - 11g. The engineer battalion S3 section ensures that the engineer battalion OPORD order is doctrinally sufficient and in a doctrinally correct format: [ARTEP 5-145-0007/6; FM 5-71-3 App D]
 - 11i. The engineer battalion XO supervises the production of the OPORD and: [ARTEP 5-145 MTP, 05-1-0007/4a]
 - 11i1 Engineer battalion XO employs the necessary staff to rapidly produce an accurate OPORD in sufficient copies by performing trained, drilled tasks and responsibilities. [CALL Newsletter No. 93-3, p. 27]

- 11j. During the MDMP in a time-constrained environment, the engineer battalion staff uses preformatted orders and graphics to reduce preparation time. [LL - CALL Newsletter No. 93-3, p. 27]
- 12. **The engineer battalion commander and staff issue the operations order.** [FM 101-5, Chap. 4; FM 5-71-3 Chap 2; ARTEP 5-145-MTP 05-1-0007/7, CALL Newsletter No. 93-3]
 - 12a. The engineer battalion commander controls the briefing. [CALL Newsletter No. 93-3, p. 31]
 - 12a1 When possible, the engineer battalion commander personally issues the OPORD with all key individuals present. [FM 5-71-3, Chap 2]
 - 12a2 A briefing sequence is determined and followed by the engineer battalion commander. [CALL Newsletter No. 93-3, p. 31]
 - 12a3 The engineer battalion OPORD is issued at an appropriate location to facilitate understanding and coordination. [CALL Newsletter No. 93-3, p. 31]
 - a) At a vantage point.
 - b) At a location that reduces travel time for key leaders.
 - c) At a location that enhances operations security (OPSEC).
 - 12a4 The engineer battalion staff prepares graphic aids to enhance the OPORD brief. [FM 101-5, Chap 4]
 - 12a5 All key engineer battalion staff and subordinates are present at the OPORD issuance and are alert and attentive during briefing. [LL - CALL Newsletter No. 93-3, p. 31]
 - 12a6 The engineer battalion commander and staff issue the engineer battalion OPORD within 1/3 of the total time available. (The parallel planning reflected in this task analysis allows the engineer battalion OPORD to be issued shortly after the supported maneuver brigade OPORD.) [ARTEP 5-145-MTP 05-1-0007/7b]
 - 12a7 The engineer battalion S3 section ensures that all key leaders receive a copy of engineer battalion OPORD with all appropriate attachments and overlays. [ARTEP 71-3 MTP, Task 71-3-3002]
 - 12a8 Engineer battalion subordinate leaders and staff members are provided timing of and guidance for subsequent backbriefs and rehearsals. [AN]

- 12b. The engineer battalion commander conducts confirmation briefs immediately after the engineer battalion OPORD is issued as a final check to ensure clear understanding of his intent. [FM 101-5, p. 4-59]
- 12b1 Subordinates repeat back to the engineer battalion commander what he wants them to do and why, to include:
- a) Critical tasks.
 - b) Specified missions.
 - c) Implied missions.
 - d) Own restated mission.
 - e) His commander's intent.
 - f) Division and brigade commanders' intents.
 - g) Synchronization requirements.
- 12b2 When possible the engineer battalion staff participates in the confirmation briefs and:
- a) Assists in clarifying issues as appropriate.
 - b) Captures any changes directed by the engineer battalion commander and ensures that the engineer battalion OPORD is appropriately refined.
- 12c. The engineer battalion commander, when conducting the MDMP in a time-constrained environment, may choose one of the following options: [FM 101-5, p. 4-43]
- 12c1 Issue a verbal order with an overlay. [FM 101-5, p. 4-59]
- 12c2 Issue an overlay with execution matrix as an order. [FM 5-71-3, Chap 2]

OUTCOME 3 ASSESSMENT

OUTCOME 3: Sufficient hard copies of engineer battalion orders and all key accompanying documents are provided to key personnel and units in accordance with TSOP.	Adequate	Marginal	Not Adequate
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(Use Tables 8 and 9)

Assessment Statements

- Engineer battalion XO employs the necessary staff to rapidly produce and accurate OPORD in sufficient copies by performing trained, drilled tasks and responsibilities.
- All key engineer battalion staff and subordinates are present at the OPORD issuance and are alert and attentive during briefing.
- The engineer battalion S3 section ensures that all key leaders receive copy of OPORD with all appropriate attachments and overlays.

OUTCOME 3 DIAGNOSTIC AID

OUTCOME 3: Sufficient hard copies of engineer battalion orders and all key accompanying documents are provided to key personnel and units in accordance with TSOP.

Task Elements

- 11. **The engineer battalion staff prepares the operations order.** [ARTEP 5-145-MTP 05-1-0007, FM 5-71-3 Chap 2 and App D; FM 101-5, Chap. 4]
- 11g. The engineer battalion S3 section ensures that the engineer battalion OPORD order is doctrinally sufficient and in a doctrinally correct format: [ARTEP 5-145-MTP 0007/6; FM 5-71-3 App D]
- 11g8 Ending:
 - e) Distribution includes:
 - (1) Subordinate units.
 - (2) Higher units.
 - (3) Adjacent units.
 - (4) Supporting units as necessary.
- 11i. The engineer battalion XO supervises the production of the OPORD and: [ARTEP 5-145 MTP, 05-1-0007/4a]
- 11i1 Engineer battalion XO employs the necessary staff to rapidly produce an accurate OPORD in sufficient copies by performing trained, drilled tasks and responsibilities. [CALL Newsletter No. 93-3, p. 27]
- 11i2 The engineer battalion S3 section incorporates all appropriate annexes, matrices, and overlays into the order. [FM 5-71-3, App D]
 - a) Execution matrix.
 - b) Decision support template.
 - c) Engineer operations overlay (includes maneuver graphics as necessary).
 - d) Intelligence annex.
 - e) CSS annex.
 - f) Movement annex.

- g) Brigade CSS overlay.
 - h) Brigade obstacle plan overlay.
- 11i3 The engineer battalion S3 checks OPORD for legibility and accuracy.
- 11i4 The engineer battalion S3 cross checks graphics with written portion of order.
- 11i5 The engineer battalion XO submits OPORD to commander for approval.
- 11i6 The engineer battalion XO coordinates OPORD with adjacent units.
- a) Briefs and employs liaison officers.
 - b) Adjusts based on coordination.
12. **The engineer battalion commander and staff issue the operations order.** [FM 101-5, Chap. 4; FM 5-71-3 Chap 2; ARTEP 5-145-MTP 05-1-0007/7, CALL Newsletter No. 93-3]
- 12a. The engineer battalion commander controls the briefing. [CALL Newsletter No. 93-3, p. 31]
- 12a1 When possible, the engineer battalion commander personally issues the OPORD with all key individuals present. [FM 5-71-3, Chap 2]
- 12a5 All key engineer battalion staff and subordinates are present at the OPORD issuance and are alert and attentive during briefing. [LL - CALL Newsletter No. 93-3, p. 31]
- 12a7 The engineer battalion S3 section ensures that all key leaders receive a copy of engineer battalion OPORD with all appropriate attachments and overlays. [ARTEP 71-3 MTP, Task 71-3-3002]
- 12a8 Engineer battalion subordinate leaders and staff members are provided timing of and guidance for subsequent backbriefs and rehearsals. [AN]
- 12c. The engineer battalion commander, when conducting the MDMP in a time-constrained environment, may choose one of the following options: [FM 101-5, p. 4-43]

12c1 Issue a verbal order with an overlay. [FM 101-5, p. 4-59]

12c2 Issue an overlay with execution matrix as an order. [FM 5-71-3, Chap 2]

OUTCOME 4 ASSESSMENT

OUTCOME 4: Engineer battalion operations continue during the planning process.	Adequate	Marginal	Not Adequate
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Assessment Statements

- Engineer battalion maintains communications with higher, subordinate, and units conducting ongoing CSS.
- Engineer battalion commander and staff coordinate ongoing engineer activities.
- OPSEC is maintained by all elements.

OUTCOME 4 DIAGNOSTIC AID

OUTCOME 4: Engineer battalion operations continue during the planning process.

Task Elements

1. **The engineer battalion commander and staff direct and lead the engineer battalion during planning for the battle.** [AN]
 - 1a. The engineer battalion commander provides command presence and leadership to soldiers, leaders, and units of the battalion. [FM 22-103, Chap 3, 5]
 - 1b. The engineer battalion commander directs ongoing engineer mobility, counter-mobility, and survivability operations. [ARTEP 5-145 MTP 05-1-0018/4f; FN-NTC Engr OC]
 - 1b1 Meetings/visits with subordinate commanders.
 - 1b2 Briefings by staff.
 - 1b3 Personal observation of engineer activities.
 - 1b4 Guidance from supported maneuver brigade commander and staff.
 - 1b5 Input from maneuver battalion task force commanders and staff.
 - 1c. The engineer battalion maintains communications. [ARTEP 5-145-MTP 05-1-0028]
 - 1c1 The communications section operates frequency modulated radio nets. [ARTEP 5-145 MTP 05-4-0028/4]
 - 1c2 Engineer battalion CPs are connected with the division mobile subscriber radio telephone system by the engineer battalion communications section. [ARTEP 5-145-MTP 05-4-0028/2(a)]
 - 1c3 The engineer Bn SO advises the battalion commander on employment of communications equipment. [FM 5-71-3 Chap 2]

- 1c4 The engineer Bn SO ensures that communications are maintained with subordinate, superior, and supported units. [FM 5-71-3 Chap 2]
- 1c5 The engineer Bn SO monitors communications security (COMSEC). [FM 5-71-3 Chap 2]
- 1c6 The engineer battalion main CP is the net control station for the engineer battalion command net. [FM 5-71-3 Chap 2]
- 1c7 The engineer battalion rear CP functions as net control station for the engineer battalion administrative and logistics net. [FM 5-71-3 Chap 2]
- 1c8 All engineer battalion elements establish and maintain radio communications. [ARTEP 5-145-MTP 05-4-1027]
- 1d. The engineer battalion main CP operations are conducted. [ARTEP 5-145 MTP 05-1-0018]
- 1d1 The engineer battalion XO directs and supervises the efforts of the main CP. [FM 5-71-3 Chap 2]
- 1d2 The engineer battalion operations sergeant coordinates with the supported maneuver brigade XO for collocation with brigade main CP. [FM 5-71-3, App B]
- 1d3 The engineer battalion XO coordinates with the supported maneuver brigade headquarters and HHC commander for: [AN]
 - a) Integration into movement serials of brigade main for displacement.
 - b) Quartering party requirements.
 - c) Location of the main CP within the headquarters area (or separate planning facility if the main CP is collocated with the brigade main CP).
 - d) Physical security measures.
 - e) NBC defense.
 - f) Space/shelter allocation.
 - g) Supply and services support, as necessary.
- 1d4 The engineer battalion S3 section monitors the current mobility, counter-mobility, and survivability operations. [ARTEP 5-145-MTP 05-1-0018/4a]
 - a) Maintains current situation overlays, information displays, execution matrices, and obstacle database. [ARTEP 5-145-MTP 05-1-0018/4a(2)(b)(c)]

- b) Continually updates the engineer estimate. [ARTEP 5-145-MTP 05-1-0018 /4b(2)(b)]
 - c) Conducts shift change briefs. [LL - CALL, News from the Front]
- 1d5 The engineer battalion S3 section reports engineer information. [ARTEP 5-145-MTP 05-1-0026]
- a) The S3 section receives and logs engineer information.
 - b) The S3 section determines the appropriate engineer battalion staff action element (S1, S2, S3, S4, BMT, NBC NCO, Bn SO).
 - c) The S3 section disseminates the information to the staff action element.
 - d) The staff action element analyzes the information for validity, importance, and required actions.
 - e) The staff action element acts on the information.
 - f) The S3 section prepares and submits reports to higher headquarters and subordinate units.
- 1d6 The engineer battalion S3 section reports obstacle information. [ARTEP 5-145-MTP 05-1-0025]
- a) The S3 section receives obstacle information from subordinate units.
 - b) The S3 section reports obstacle information to higher headquarters and subordinate units.
 - c) The S3 section records obstacle information and posts it on the overlay.
 - d) The S3 briefs the staff and company commanders on obstacle information received by higher headquarters and adjacent units.
- 1d7 The engineer battalion S3 section disseminates WARNOs and FRAGOs to all subordinate units. [FM 5-71-3 Chap 2]
- 1d8 The engineer battalion S2 and the S3 section direct and receive engineer intelligence collection in accordance with the brigade R&S plan. [ARTEP 5-145-MTP 05-1-0413]
- a) The engineer battalion S2 monitors tactical intelligence reporting of engineer PIR on the brigade operations and intelligence (O&I) net. [AN]
 - (1) River crossing (opposed).
 - (2) Enemy obstacles.
 - (3) Enemy engineer activity.
 - (4) Enemy engineer equipment.
 - (5) Terrain.
 - b) The engineer battalion S2 in accordance with engineer battalion OPORD directs engineer companies to do specific engineer technical reconnaissance. [ARTEP 5-145-MTP 05-1-0413/2]
 - (1) The S2, in conjunction with the engineer battalion S3, briefs engineer reconnaissance personnel.

- (a) Enemy situation.
 - (b) Reporting requirements.
 - (c) Detailed information.
 - 1 Characteristics of area; route to the reconnaissance objective.
 - 2 Communications nets and procedures.
 - (d) CSS support plan, to include casualty evacuation.
 - (e) Engineer battalion commander's guidance and intent.
 - (2) The S2 provides forms and materials to assist in collecting and recording information.
 - (3) The S2 ensures that coordination of engineer battalion reconnaissance is effected with the maneuver brigade S2 concerning:
 - (a) NAIs.
 - (b) Force protection measures.
 - (c) Casualty evacuation.
 - (4) The S2 receives reports directly from engineer reconnaissance teams.
 - (5) The S2 consolidates the engineer information obtained during reconnaissance operations.
 - (a) River (unopposed).
 - (b) Bridge.
 - (c) Route.
 - (d) Engineer resource.
 - (6) The S2 processes from intelligence and reconnaissance reports the information and develops intelligence.
 - c) The engineer battalion S2 updates the situation analysis of the engineer estimate. [ARTEP 5-145-MTP 05-0413/3].
 - d) The engineer battalion S2 requests and obtains standard and non-standard topographic products. [AN]
 - e) The engineer battalion S2 sends the intelligence to the ABE, maneuver units, and the brigade S2 by fax, courier, or radio. [ARTEP 5-145-MTP 05-1-0413/4]
- 1d9 The engineer battalion S3 section monitors implementation of OPSEC measures. [ARTEP 71-3-MTP 71-3-2010]
- 1e. The engineer battalion rear CP conducts operations. [ARTEP 5-145-MTP 05-1-0018]
- 1e1 The engineer battalion rear CP assumes the functions of the main CP if required. [FM 5-71-3 Chap 2]
- 1e2 The engineer battalion S1 and S4 sections establish the rear CP in the BSA and: [FM 5-71-3 Chap 2]
- a) The S4 section, in conjunction with the S1 section, monitors the tactical situation. [FM 5-71-3 Chap 2]

- (1) Maintains current situation maps (SITMAP) and operational information displays.
 - (2) Conducts shift change briefs.
- b) The S1/S4 sections update the main CP on key CSS factors. [FM 5-71-3 Chap 6]
 - (1) Last LOGPAC resupply.
 - (2) Number of operational systems.
 - (3) Overall personnel status.
 - (4) Projections on attaining specified operational readiness levels.
- c) The S1/S4 sections coordinate personnel and logistic support for the engineer battalion main CP. [AN]

- 1e3 The engineer battalion S4 section plans, coordinates, directs, and tracks logistic operations. [ARTEP 5-145-MTP 05-1-1000]
- a) The S4 section maintains daily staff journal.
 - b) The S4 section supervises the requisition, receipt, storage, and distribution of supplies and equipment (all Classes except VIII).
 - c) The S4 section supervises and monitors property accounting procedures.
 - d) The S4 section supervises and monitors supply and maintenance record procedures.
 - e) The S4 section forecasts and maintains data on Class II items.
 - f) The S4 section and the support platoon establish and camouflage material storage areas.
 - g) The S4 section coordinates other supply/service actions.
 - (1) Laundry support.
 - (2) Clothing exchange and bath points.
 - (3) Salvage.
 - (4) Receipt, storage, and issuance of organizational clothing and individual equipment.
 - (5) Transportation of remains to graves registration point in BSA.
 - (6) Distribution of unit basic loads.
 - h) The S4 section, with assistance of BMT, coordinates, controls, and supervises the turn-in of supplies and equipment.
 - i) The S4 section, with the assistance of the BMT, coordinates, controls, and supervises the issue of supplies and equipment.
 - j) The S4 section, with input from unit First Sergeants (1SGs), maintains radio and weapon configurations by each vehicle. [FN - USAES]
 - k) The S4 section coordinates transportation requirements.
 - (1) Coordinates with the S3 section for priorities for movement.
 - (2) Reviews movement and load plans of subordinate units.
 - (3) Determines requirements for transportation and submits requests for external transportation.

- (4) Obtains road clearances for movements.
- l) Revises the logistics estimate. [ARTEP 5-145-MTP 05-1-0018/4b(3)]
- 1e4 The engineer battalion S1 section conducts administrative operations. [ARTEP 5-145-MTP 05-1-1008]
 - a) Maintains a daily staff journal.
 - b) Receives and reports casualties.
 - c) Provides mail services.
 - d) Performs administrative functions in accordance with Department of the Army (DA) Pamphlet (Pam) 600-8 series.
 - e) Plans and supervises the discipline, law, and order program.
 - f) Monitors file and record maintenance.
 - g) Revises the personnel estimate.
 - h) Coordinates and arranges religious support.
 - i) Directs medical section leader concerning: [AN]
 - (1) Preventative health activities.
 - (2) Reporting and tracking casualties' status.
 - (3) Information on medic casualty treatment and evacuation, location of ambulance exchange points (AXPs), and medical support facilities within brigade area of operations (AO).
- 1e5 The engineer battalion S1 section performs strength accounting. [ARTEP 5-145-MTP 05-1-1032]
 - a) Updates the battalion battle roster.
 - b) Performs personnel status reporting.
 - c) Reports casualties.
- 1e6 The engineer battalion S1 section conducts replacement operations. [ARTEP 5-145-MTP 05-1-1033]
 - a) Establishes a replacement receiving point and advises the supported brigade S1 of the location.
 - b) Welcomes and orients replacements.
 - c) Assigns replacements.
 - d) Performs personnel actions.
 - e) Briefs replacements.
 - f) Inspects soldier clothing and equipment and coordinates provision of any required items.
 - g) Coordinates for transportation to subordinate units.
- 1e7 The battalion S1 section coordinates EPW operations. [FM 5-71-3 Chap 2; ARTEP 5-145-MTP 05-1-1028]

- a) Coordinates EPW holding and processing procedures.
- b) Supervises the processing of EPWs.
- c) Evacuates EPWs to the supported maneuver brigade EPW collection point.
- d) Coordinates with the engineer battalion S4 for transportation.

1e8 The HHC commander directs the battalion field trains and: [FM 5-71-3 Chap 2; FN - NTC Engr OCs]

- a) Executes CSS portion of engineer battalion plan/OPORD.
- b) Coordinates the CSS plan with the S1, S4, and BMT.
- c) Coordinates flow of information between engineer battalion combat and field trains CPs.
- d) Coordinates with FSB for positioning and security of field trains.
- e) Coordinates support for the battalion in the BSA.
- f) Directs company supply sergeants in formation of LOGPACs to subordinate units and engineer main CP.
- g) Identifies and acts on CSS problems.
- h) The HHC commander serves as staff engineer to the FSB. [FM 5-71-3 Chap 2; FN - USAES]
 - (1) Assists FSB staff in identifying requirements for engineer support for CSS operations in the BSA.
 - (2) Assists FSB staff in coordinating/monitoring engineer support provided in the BSA.
- i) The S4 section coordinates engineer battalion food service section operations:
 - (1) Monitors food service operations.
 - (2) Prepares the battalion feeding plan.
 - (3) Inspects field feeding operations.

1e9 The BMT supervises engineer battalion maintenance operations and establishment of UMCP. [FM 5-71-3 Chap 2, ARTEP 5-145-MTP 05-1-1000/5]

- a) Supervises the battalion maintenance program.
- b) Tracks equipment status.
- c) Reviews unit status reports and material condition reports.
- d) Conducts spot inspections.
- e) Reviews and supervises the prescribed load list (PLL) for Class IX repair parts.
- f) Coordinates the recovery and evacuation of unserviceable/ irreparable engineer battalion vehicles.
- g) Establishes maintenance priorities and monitors controlled exchange program.
- h) Monitors the Army oil analysis program and calibration program.
- i) Revises the maintenance input to the logistic estimate.
- j) Monitors UMCP operations.

- 2. **The engineer battalion receives an order initiating a new mission from higher headquarters.** [FM 101-5; FM 5-71-100, FM 5-71-3]
 - 2h. The engineer battalion S3 participates in the supported maneuver brigade's planning process. [AN]
 - 2h1 Moves to the maneuver brigade main CP.
 - 2h2 Directs ABE section participation.
 - 2h3 Provides information on engineer battalion status, capabilities, and limitations.
 - 2h4 Provides information to the engineer battalion main CP about supported maneuver brigade planning.
 - 2i. The engineer battalion S3 (as OIC of the ABE section) and the engineer battalion XO coordinate closely to support planning in parallel with the brigade and facilitate information flow. [FM 5-71-3 p. 2-22]
 - 2i2 The engineer battalion XO and staff provide support to the ABE section concerning:
 - a) Engineer mission analysis.
 - b) EBA.
 - c) Analysis of SOEO and supporting maneuver brigade COAs.
 - 2j. The engineer battalion XO directs the efforts of the engineer battalion staff in preparation for implementing the MDMP. [FM 5-71-3 Chap 2]
 - 2j2 The engineer battalion XO ensures that any LNOs are:
 - a) Dispatched as required.
 - b) Received from other units and given an orientation briefing.

PROGRAM REVIEW MEASURES OF EFFECTIVENESS

The following tables are directed at capturing the unit's ability to plan for combat operations as well as produce the documents needed to communicate the plan. While these tables were derived to measure the accomplishment of the battalion's planning, they are also related to the successful performance of the tasks listed in the battlefield function (BF) function analysis (FA) task list, "Engineer Battalion Battlefield Function 18; Plan for Combat Operations." Table 1 records the battalion's receipt and consequent issuance of orders. Table 2 further examines the timeliness with which WARNOs and the engineer battalion OPORD were received by subordinate units. Table 3 examines the ability of the engineer battalion commander and staff to conduct the planning process. Table 4 assesses the quality of the EBA which is the primary estimate which guides engineer COA development. Table 5 examines the quality of all the staff estimates. Table 6 is concerned with the tactical soundness of engineer planning. Table 7 measures the required internal integration and coordination of engineer activities. Table 8 assesses the quality of the engineer OPORD. Table 9 measures the quality of the engineer OPORD briefing. Table 10 is designed to assess the subordinate engineer units understanding of the engineer plan during the confirmation briefing which concludes the planning phase.

Table 1. Engineer battalion receipt of orders.

This table addresses the timelines for OPORD issuance. Indicate the dates and times the following occurred.

Date/time engineer battalion received initial WARNO from the engineer brigade	Date_____ Time_____
Date/time engineer battalion received initial WARNO from supported maneuver brigade	Date_____ Time_____
Date/time engineer battalion received maneuver brigade OPORD	Date_____ Time_____
Date/Time engineer battalion received engineer brigade OPORD	Date_____ Time_____
Date/Time engineer battalion issued engineer battalion OPORD	Date_____ Time_____
Date/Time engineer battalion completed the confirmation briefing.	Date_____ Time_____

Table 2. Times orders were received by engineer units.

Once orders and additional information are received at battalion headquarters, the subordinate leaders should be informed of relevant information to conduct troop leading procedures (TLP). Indicate the date and time the following units received orders from the engineer battalion and whether or not the information needed for planning and other TLP was provided.

Receiving Unit (As Appropriate)	WARNO #1	WARNO #2	WARNO #3	Other WARNOs	Engineer OPORD
Engineer company A	Date _____ Time _____ Critical information provided? Yes No	Date _____ Time _____ Critical information provided? Yes No	Date _____ Time _____ Critical information provided? Yes No	# _____ Date _____ Time _____	Date _____ Time _____
Engineer company B	Date _____ Time _____ Critical information provided? Yes No	Date _____ Time _____ Critical information provided? Yes No	Date _____ Time _____ Critical information provided? Yes No	# _____ Date _____ Time _____	Date _____ Time _____
Engineer company C	Date _____ Time _____ Critical information provided? Yes No	Date _____ Time _____ Critical information provided? Yes No	Date _____ Time _____ Critical information provided? Yes No	# _____ Date _____ Time _____	Date _____ Time _____
Headquarters and headquarters company	Date _____ Time _____ Critical information provided? Yes No	Date _____ Time _____ Critical information provided? Yes No	Date _____ Time _____ Critical information provided? Yes No	# _____ Date _____ Time _____	Date _____ Time _____

Table 2. (Continued)

Receiving Unit (As Appropriate)	WARNO #1	WARNO #2	WARNO #3	Other WARNOs	Engineer OPORD
Attached/supporting units _____	Date _____ Time _____ Critical information provided? Yes No	Date _____ Time _____ Critical information provided? Yes No	Date _____ Time _____ Critical information provided? Yes No	# _____ Date _____ Time _____	Date _____ Time _____
Attached/supporting units _____	Date _____ Time _____ Critical information provided? Yes No	Date _____ Time _____ Critical information provided? Yes No	Date _____ Time _____ Critical information provided? Yes No	# _____ Date _____ Time _____	Date _____ Time _____
Attached/supporting units _____	Date _____ Time _____ Critical information provided? Yes No	Date _____ Time _____ Critical information provided? Yes No	Date _____ Time _____ Critical information provided? Yes No	# _____ Date _____ Time _____	Date _____ Time _____

Notes:

Table 3. The engineer battalion commander and staff planning process.

The following table has been designed to examine the engineer battalion commander's and staff's ability to conduct planning operations. Process statements are used to describe an aspect of the planning process. A numerical scale is included to identify the approximate degree of proficiency to which the process was accomplished. Circling "1" on the scale means the task was not met. ("2" and "3" are provided to allow differentiation between extremes.) Circling "2" means the task was poorly accomplished. "3" indicates the task was accomplished but requires training. Circling "4" means that the task was fully accomplished in accordance with doctrine. The paragraphs under the process statements are "anchors" with which to guide the assessor when determining whether the process statements were accomplished. The "anchors" are not meant to be all inclusive.

1. Upon receipt of an order from higher headquarters, the engineer battalion commander and staff immediately began processing and disseminating the information. (Use Table 1)

The commander or staff did not get the information to subordinates in time to allow maximum time for the subordinates' parallel planning.	1	2	3	4	The commander and staff instituted appropriate staff procedures (e.g., established timelines for time management), immediately disseminated pertinent information to subordinates, and immediately began planning in parallel with the supported brigade.
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2. The engineer battalion commander and staff completed the mission analysis.

Mission analysis resulted in an incomplete or inaccurate derivation of mission, current intelligence picture, assets available, resources required, time available (estimate), or a doctrinally incorrect restated mission.	1	2	3	4	The engineer battalion commander and staff correctly identified the type of mission, current intelligence picture, assets available, resources required, time available (estimate), and a doctrinally correct restated mission.
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Table 3. (Continued)

3. The engineer battalion commander issued planning focus and guidance to the staff.

The engineer battalion commander provided incomplete or unclear guidance regarding identification, integration, and synchronization of tasks to complete the brigade's assigned engineer mission, did not issue clear procedures to enable parallel planning by the brigade staff and engineer battalion staff, or did not focus his staff so that the use of planning time could be optimized.	1	2	3	4	The engineer battalion commander focused his staff so that efficient use of the planning time available was made, the brigade staff and engineer battalion staff conducted parallel planning, and the ABE section and engineer battalion staff identified, integrated, and coordinated tasks to support the engineer mission assigned by the maneuver brigade.
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4. The engineer battalion commander and staff properly managed the use of available time.

The commander or staff did not establish, refine, or adhere to their own time plan thereby reducing the planning time for engineer elements (e.g., violating the 1/3, 2/3rds "time standard").	1	2	3	4	The commander and staff established, refined, and adhered to their time plan thereby maximizing planning time available all engineer elements.
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5. The engineer S3, S2 and ABE conducted the engineer battlefield assessment (EBA). (Use Table 4)

The EBA did not result in accurate terrain analysis, enemy tactical capabilities, enemy engineer capabilities, probable COAs, or friendly engineer capabilities.	1	2	3	4	The EBA correctly portrayed the terrain, enemy probable COAs and capabilities, and friendly engineer capabilities.
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Table 3. (Continued)

6. The engineer battalion commander issued his intent for the mission.

The engineer battalion commander's intent statement did not reflect the supported brigade, division, or engineer brigade commanders' intents, or it did not provide subordinates with an overview of the mission, or allow subordinate initiative. The engineer battalion commander's intent was unclear, verbose, incomplete, or imprecise.	1	2	3	4	The engineer battalion commander's intent reflected the supported brigade, engineer brigade, and division commanders' intents, provided subordinates with an overview of the mission, and provided for subordinate initiative. The engineer battalion commander's intent was succinctly, precisely, concisely, clearly and completely expressed.
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7. The engineer battalion commander and staff developed courses of action (COAs). (Use Tables 4 and 5)

The COAs developed were not distinct, complete, suitable, feasible, or acceptable. The engineer battalion commander or staff failed to consider security for engineer elements, identify METT-T factors which would impede unit(s)' ability to accomplish the assigned tasks, or identify assets required to accomplish the assigned tasks.	1	2	3	4	The commander and staff developed distinct, suitable, feasible, and acceptable COAs. The commander and staff integrated and coordinated security for engineer elements, identified METT-T factors which would have impeded unit(s)' ability to accomplish the assigned tasks, and identified assets required to accomplish the assigned tasks.
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8. The engineer battalion commander and staff analyzed (war-gamed) engineer COAs. (Use Table 5)

The commander or staff failed to coordinate activities, remain objective, accurately assess suitability, feasibility, acceptability, or identify critical events and problems while wargaming engineer support for the supported brigade.	1	2	3	4	The commander and staff remained objective, accurately assessed advantages and disadvantages, identified all critical events, and problems for each COA war gamed.
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Table 3. (Continued)

9. The engineer battalion staff compared courses of action. (Use Table 6)

COA were not compared due to premature selection, or the COA selected was not the most suitable, feasible, or acceptable. An unsound recommendation was made to the engineer battalion commander.	1	2	3	4	COA were thoroughly compared; and the most suitable, feasible, and acceptable COA was identified and recommended to the engineer battalion commander.
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10. The engineer battalion commander announced his decision. (Use Table 6)

The engineer battalion commander issued an unclear intent statement or concept of operation. The battalion commander's intent for support did not support the brigade's mission. The commander failed to state how engineer support was to be conducted.	1	2	3	4	The commander decided upon a suitable, feasible, and acceptable COA. The commander clearly and succinctly expressed his decision and how the battalion would support the brigade. The intent supported the brigade's mission.
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11. The battalion XO and staff developed the engineer OPORD. (Use Tables 7 and 8)

The engineer OPORD was not clear, or concise. It did not have all the necessary overlays, annexes, and templates. The staff failed to provide accurate and relevant information from their estimates.	1	2	3	4	The staff worked together and developed a complete, concise, and timely engineer OPORD.
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Table 4. Quality of the Engineer Battlefield Assessment (EBA).

The EBA consists of three parts: a terrain analysis, an enemy mission/engineer capability analysis, and friendly engineer capability analysis. In essence the EBA is the engineer estimate for the supported brigade. Rate whether or not the EBA was complete, accurate, and timely. ‘Complete’ means all the information doctrinally required was presented. ‘Accurate’ means the information was correct. ‘Timely’ means the information was developed in time to be used during the COA development and analysis.

Components	Complete?		Accurate?		Timely?	
I. Terrain Analysis:						
• Observation and fields of fire	Yes	No	Yes	No	Yes	No
• Cover and concealment	Yes	No	Yes	No	Yes	No
• Obstacles	Yes	No	Yes	No	Yes	No
• Avenues of approach	Yes	No	Yes	No	Yes	No
• Advantages for enemy forces	Yes	No	Yes	No	Yes	No
• Disadvantages for enemy forces	Yes	No	Yes	No	Yes	No
• Advantages for friendly forces	Yes	No	Yes	No	Yes	No
• Disadvantages for friendly forces	Yes	No	Yes	No	Yes	No
• Terrain’s impact on accomplishing the mission	Yes	No	Yes	No	Yes	No
II. Enemy engineer capabilities:						
• Enemy’s doctrinal employment of engineers	Yes	No	Yes	No	Yes	No
• Possible enemy engineer operations and impact on the battle	Yes	No	Yes	No	Yes	No
• Order of battle	Yes	No	Yes	No	Yes	No
• Enemy manpower and equipment resources	Yes	No	Yes	No	Yes	No
• Recent enemy activities	Yes	No	Yes	No	Yes	No
• Intelligence situation template	Yes	No	Yes	No	Yes	No
• Enemy doctrinal engineer employment overlay	Yes	No	Yes	No	Yes	No

Table 4. (Continued)

Components	Complete?	Accurate?	Timely?
III. Friendly engineer capability			
• Brigade and task force's missions	Yes No	Yes No	Yes No
• Task organizations for	Yes No	Yes No	Yes No
◇ Maneuver forces	Yes No	Yes No	Yes No
◇ Engineer forces	Yes No	Yes No	Yes No
◇ Availability of critical resources	Yes No	Yes No	Yes No
• Engineer ability to accomplish the supported brigade's mission	Yes No	Yes No	Yes No

Comments as appropriate:

[illegible]

Table 5. Quality of the estimates required for COA development.

This table examines the quality of each estimate required to produce a suitable, feasible, and acceptable COA and subsequent OPORD. “Forward Looking” means the estimate anticipated future situations and requirements. “Continuously Updated” means that the estimate contained all the current information needed and that it was updated as information changed. “Complete” means that all the information required was included in the estimate. “Timely” means that the estimate was completed in time to be of use. “Relevant” means that all the information in the estimate pertained to the actual situation. “Useable for COA analysis” means that all the available information incorporated into the estimate was accurate, concise, and appropriately addressed the needs of the situation. There is space to record notes following the table.

Estimate	Forward Looking?	Continuously Updated?	Complete?	Timely?	Relevant?	Useable for COA Analysis?
Commander’s estimate	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No
Engineer battlefield assessment	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No
NBC estimate	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No
Logistics estimate	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No
Personnel estimate	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No
Communications estimate	Yes No	Yes No	Yes No	Yes No	Yes No	Yes No

Notes:

Table 6. Tactical soundness of planning.

This table addresses the tactical soundness of engineer battalion planning and not the engineer OPORD, which is the product of the planning process. A “suitable” plan is capable of supporting the brigade mission within the engineer brigade and supported brigade commanders’ intents. “Feasible” refers to whether the engineer battalion and each subordinate unit has sufficient means, resources, and time available to accomplish their missions. (Data from Table 7 which examines coordination and integration will complement an appraisal of feasibility.) An “acceptable” plan subjects the force, or part of the force, to no more risk than is necessary to meet the brigade and engineer brigade commanders’ intents. Indicate whether the plan satisfied these criteria. Use the space following the table to record notes as desired.

Planned support by the engineer battalion						
Considerations		Suitable?		Feasible?		Acceptable?
Mobility		Yes	No	Yes	No	Yes No
• Breaching operations (in-stride, deliberate)						
◇ Number of lanes						
◇ Locations						
• Combat road and trail construction						
◇ Bypass construction						
◇ Rubble clearing						
◇ Improving routes						
• Gap crossing						
◇ River						
◇ Other						

Table 6. (Continued)

Planned support by the engineer battalion								
Considerations			Suitable?		Feasible?		Acceptable?	
Countermobility								
• Obstacles								
◇ Desired effects								
◇ Obstacle belts								
◇ Number			Yes	No	Yes	No	Yes	No
◇ Location								
◇ Type								
• Family of scatterable mines (FASCAM)								
Survivability								
• Required survivability positions			Yes	No	Yes	No	Yes	No
◇ Fighting positions								
◇ Protective positions								

Notes:

Table 7. Integration and coordination of engineer activities.

Intent of this table is to record the Engr Bn commander's and staff's use of the planning process to integrate and coordinate the elements of combat power represented by combat, combat support, and combat service support capabilities available to the engineer battalion. "Integrate" and "coordinate" mean that the activities of the available elements of combat power were effectively planned for so that each can be brought to bear on the battle at the appropriate times. The results of integration and coordination will be that the elements of combat power are available to influence mission accomplishment as envisioned by the Engr Bn commander. The commander's and staff's actions during the planning phase must cause the elements of combat power to be deconflicted vertically, horizontally, and within the BOS to ensure that they can be brought together in a harmonious order or relationship during the battle. (Subsequent to this integration and coordination, the brigade commander will synchronize the capabilities of all of the elements of the brigade combat team.) Circle the response appropriate for the integration and coordination for each element of combat power. For those elements of combat power listed in the table but not available to the engineer battalion, the observer should circle "N/A".

Considerations	Integrated and Coordinated?	
Intelligence, e.g.: <ul style="list-style-type: none"> • Engineer reconnaissance in TF AOs • Information acquisition 	Yes	No
	N/A	
Fire Support, e.g.: <ul style="list-style-type: none"> • Fires planning for engineer work sites, breaches • FASCAM planning • Obstacle locations and targets 	Yes	No
	N/A	
Command and Control, e.g.: <ul style="list-style-type: none"> • Communication networks • Retransmission equipment positioning • CP's locations • Locations of Bn commander (Cdr) (demands of Engr Bn command vs. Bde Engr) 	Yes	No
	N/A	
Command and Control, e.g.: (cont'd) <ul style="list-style-type: none"> • Rehearsals' schedules • Attachments and detachments 	Yes	No

Table 7. (Continued)

Considerations	Integrated and Coordinated?
<ul style="list-style-type: none"> • LNOs • Hand-off of completed obstacles 	N/A
Mobility and Survivability, e.g.: <ul style="list-style-type: none"> • Mobility operations: <ul style="list-style-type: none"> • Engineer tasks at breaches • Countermobility operations: <ul style="list-style-type: none"> • Obstacle siting • Initiation of obstacles • Survivability operations: <ul style="list-style-type: none"> • Positions • Decontamination sites 	<div>Yes</div> <div>No</div> <div>N/A</div>
Air Defense, e.g.: <ul style="list-style-type: none"> • ADA protection • Small arms for air defense (SAFAD) 	<div>Yes</div> <div>No</div> <div>N/A</div>
Combat Service Support, e.g.: <ul style="list-style-type: none"> • Delivery of class (CL) IV/V (barrier) • Casualty evacuation • Recovery and repair of equipment • Emergency resupply 	<div>Yes</div> <div>No</div> <div>N/A</div>

Notes:

Table 8. Quality of the engineer OPORD.

The engineer OPORD should be complete with all the necessary components and component elements. Rate whether or not the engineer OPORD had all the components (“Included”), whether the components were complete (“Complete”), whether the information provided was accurate, clear, and concise. “Clear” means use of only doctrinal terms and abbreviations as listed in FM 101-5-1. “Concise” means use of the most effective, efficient format to convey information that indicates actions to be taken; often this means using overlays and other graphics to convey information which would otherwise require lengthy written documents. Circle the appropriate responses.

OPORD Contents	Included?		Complete?		Accurate information?		Clear?		Concise?	
Administrative Information	Yes	No	Yes	No	Yes	No				
• Classification	Yes	No	Yes	No	Yes	No				
• Heading	Yes	No	Yes	No	Yes	No				
• Acknowledgment	Yes	No	Yes	No	Yes	No				
• Authentication	Yes	No	Yes	No	Yes	No				
• Distribution	Yes	No	Yes	No	Yes	No				
Situation	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
• Enemy forces	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
• Friendly forces	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
• Attachments and detachments	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Mission	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Execution	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
• Intent	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
• Concept of operations	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
• Tasks to subordinate units	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
• Coordinating instructions	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Service Support	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Command and Signal	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No

Table 8. (Continued)

OPORD Contents	Included?		Complete?		Accurate information?		Clear?		Concise?	
Engineer operations overlay	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Decision support template	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Execution matrix (when required)	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Intelligence annex (when required)	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
CSS annex (when required)	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Movement annex (when required)	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Brigade obstacle plan overlay (when required)	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No
Brigade CSS overlay (when required)	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No

Notes:

Table 9. Engineer OPORD briefing.

This table examines the quality of the Engineer OPORD briefing conducted by the battalion commander and staff. “Yes” means the particular aspect of the briefing was accomplished in accordance with doctrine. “No” means the aspect was either not done or requires training.

1. When possible the engineer commander personally issued the engineer OPORD.	Yes	No
2. All key individuals were present.	Yes	No
3. The briefing was organized to follow the written engineer OPORD format.	Yes	No
4. Engineer commander minimized distractions.	Yes	No
5. All personnel present were alert and listening.	Yes	No
6. Engineer commander’s presentation was clear and concise.	Yes	No
7. Sketch maps were used to convey the plan.	Yes	No
8. Participants were encouraged to ask questions when necessary.	Yes	No
9. The staff contributed as required and were able to issue any relevant information.	Yes	No
10. When possible, the order is issued at a site from which participants can view critical terrain.	Yes	No
11. When possible, the site selected for the briefing minimized travel time for key leaders.	Yes	No
12. The site selected was secured and relatively safe.	Yes	No
13. Engineer S3 ensured all key commanders/leaders received a copy of the engineer OPORD with all attachments and overlays.	Yes	No
14. Subordinate leaders and staff members were provided time, location, and guidance for subsequent brief-backs and rehearsals.	Yes	No

Notes:

Table 10. Confirmation briefings.

Indicate whether designated personnel were present at the briefing of the OPOD, and whether a backbrief was given by circling the appropriate response. “Adequate” means the individual demonstrated a comprehensive understanding of the brigade mission and the missions for his unit. “Not Adequate” means the individual demonstrated a lack of understanding of either the commander’s intent or the mission(s) for his unit. Write down the problem in the space provided if the backbrief was inadequate.

Leaders	Present at the OPOD briefing?	Gave backbrief?	Demonstrated understanding of mission and tasks
Bn XO	Yes No		Adequate Not Adequate:
Bn S2	Yes No		Adequate Not Adequate:
Bn S3	Yes No		Adequate Not Adequate:
Bn S1 or S4	Yes No		Adequate Not Adequate:
Other Bn staff	Yes No		Adequate Not Adequate:
Engineer company A	Yes No	Yes No	Adequate Not Adequate
Engineer company B	Yes No	Yes No	Adequate Not Adequate
Engineer company C	Yes No	Yes No	Adequate Not Adequate

Table 10. (Continued)

Leaders	Present at the OPORD briefing?	Gave backbrief?	Demonstrated understanding of mission and tasks
Engineer headquarters and headquarters company	Yes No	Yes No	Adequate Not Adequate
Attached/supporting units	Yes No	Yes No	Adequate Not Adequate
Attached/supporting units	Yes No	Yes No	Adequate Not Adequate
Attached/supporting units	Yes No	Yes No	Adequate Not Adequate
Engineer Bn Cdr	Yes No		
Engineer XO	Yes No		
Engineer Bn S1	Yes No		
Engineer Bn S2	Yes No		
Engineer Bn S3	Yes No		
Engineer Bn S4	Yes No		
Engineer Bn maintenance technician	Yes No		

Table 10. (Continued)

Leaders	Present at the OPORD briefing?	Gave backbrief?	Demonstrated understanding of mission and tasks
NBC NCO	Yes No		
Engineer Bn SO	Yes No		

Notes:

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5-100	Engineer Combat Operations, November 1988
5-103	Survivability, 10 June 1985
22-103	Leadership and Command at SEMOR Levels, 21 June 1987
34-8	Combat Commanders Handbook on Intelligence, September 1992
90-7	Combined Arms Obstacle Integration, 29 September 1994
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101-5	Command and Control for Commanders and Staff (Draft), August 1993
101-5-1	Operational Terms and symbols, October 1985

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5-145-MTP	Mission Training Plan for the Headquarters and Headquarters Company, Engineer Battalion, Heavy Division/Corps, February 1989
71-3 MTP	Mission Training Plan for the Heavy Brigade Command Group and Staff, October 1988

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101-5	Command and Staff Decision Processes, February 1995
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Battle Command Battle Laboratory Publication

BATTLE COMMAND: Leadership and Decision Making for War and Operations Other Than War,
Battle Command Battle Laboratory, Fort Leavenworth, KS, April 1994

Appendix A

ACRONYMS AND ABBREVIATIONS

1SG	first sergeant
AAR	after action review
ABE	assistant brigade engineer
ADA	air defense artillery
AN	author note
AO	area of operations
ARI	U.S. Army Research Institute for the Behavioral and Social Sciences
ARTEP	Army Training and Evaluation Program
AXP	ambulance exchange point
BCBL	Battle Command Battle Laboratory
Bde	brigade
BF	battlefield function
BMO	battalion maintenance officer
BMT	battalion maintenance technician
Bn	battalion
BOS	battlefield operating system(s)
BSA	brigade support area
C2	command and control
C3I	command, control, communications, and intelligence

CALL	Center for Army Lessons Learned
CCF	critical combat function
CCIR	commander's critical information requirements
Cdr	commander
CGSC	Command and General Staff College
CL	Class
CL I	subsistence items
CL II	individual equipment, clothing, tool sets, house keeping supplies
CL III	petroleum, oils, lubricants
CL IV	construction and barrier material
CL V	ammunition
CL VII	major end items
CL VIII	medical material
CL IX	repair parts and components
CMLO	chemical officer
COA	course of action
COMSEC	communications security
CP	command post
CPX	command post exercise
CSR	controlled supply rate
CSS	combat service support
CTC	Combat Training Center
DA	Department of the Army

DP	decision point
DS	direct support
DST	decision support template
DTDD	Directorate of Training and Development Doctrine
EBA	engineer battlefield assessment
EEFI	essential elements of friendly information
Engr	engineer
EPW	enemy prisoner of war
FA	function analysis
FASCAM	family of scatterable mines
FFIR	friendly force information requirements
FM	field manual
FN	field note
FRAGO	fragmentary order
FSB	forward support battalion
FTX	field training exercise
FXXITP	Force XXI Training Program
GS	general support
HHC	headquarters and headquarters company
HQ	headquarters
IPB	intelligence preparation of the battlefield

ITTBBST	Innovative Tools and Techniques for Brigade and Below Staff Training
LNO	liaison officer
LOGPAC	logistical package
MCOO	modified combined obstacle overlay
MDMP	military decision-making process
METT-T	mission, enemy, terrain, troops, and time available
MICLIC	mine clearing line charge
MOPP	mission oriented protective posture
MP	military police
MSR	main supply route
MTP	mission training plan
NAI	named area of interest
NBC	nuclear, biological, and chemical
NCO	noncommissioned officer
NTC	National Training Center
OC	observer-controller
O&I	operations and intelligence
OIC	officer in charge
OPCON	operational control
OPORD	operations order
OPSEC	operations security

Pam	Pamphlet
PIR	priority intelligence requirement
PLL	prescribed load list
S1	Adjutant/Personnel Officer, Brigade and Battalion Staff
S2	Intelligence Officer, Brigade and Battalion Staff
S3	Operations and Training Officer, Brigade and Battalion Staff
S4	Supply/Logistics Officer, Brigade and Battalion Staff
SAFAD	small arms for air defense
SCATMINE	scatterable mine
SITMAP	situation map
SO	signal officer
SOEO	scheme of engineer operations
SOP	standing operating procedure
ST	student text
TAC	tactical
TAI	target area of interest
TF	task force
TLP	troop leading procedures
TRADOC	U.S. Army Training and Doctrine Command
TSOP	tactical standing operating procedures
UMCP	unit maintenance collection point

USAARMC	U.S. Army Armor Center
USAARMS	U.S. Army Armor School
USAES	U.S. Army Engineer School
WARNO	warning order
XO	executive officer